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# The Public Health Journal

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VOLUME XIX

NUMBER 7

The Population of Nova Scotia

*A. C. Jost*

The Physician and Industrial Disease

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Undulant Fever in Ontario

Case Report

*W. P. Warner and D. L. McLean*

The Montreal Anti-Tuberculosis and  
General Health League

*J. A. Boudouin*

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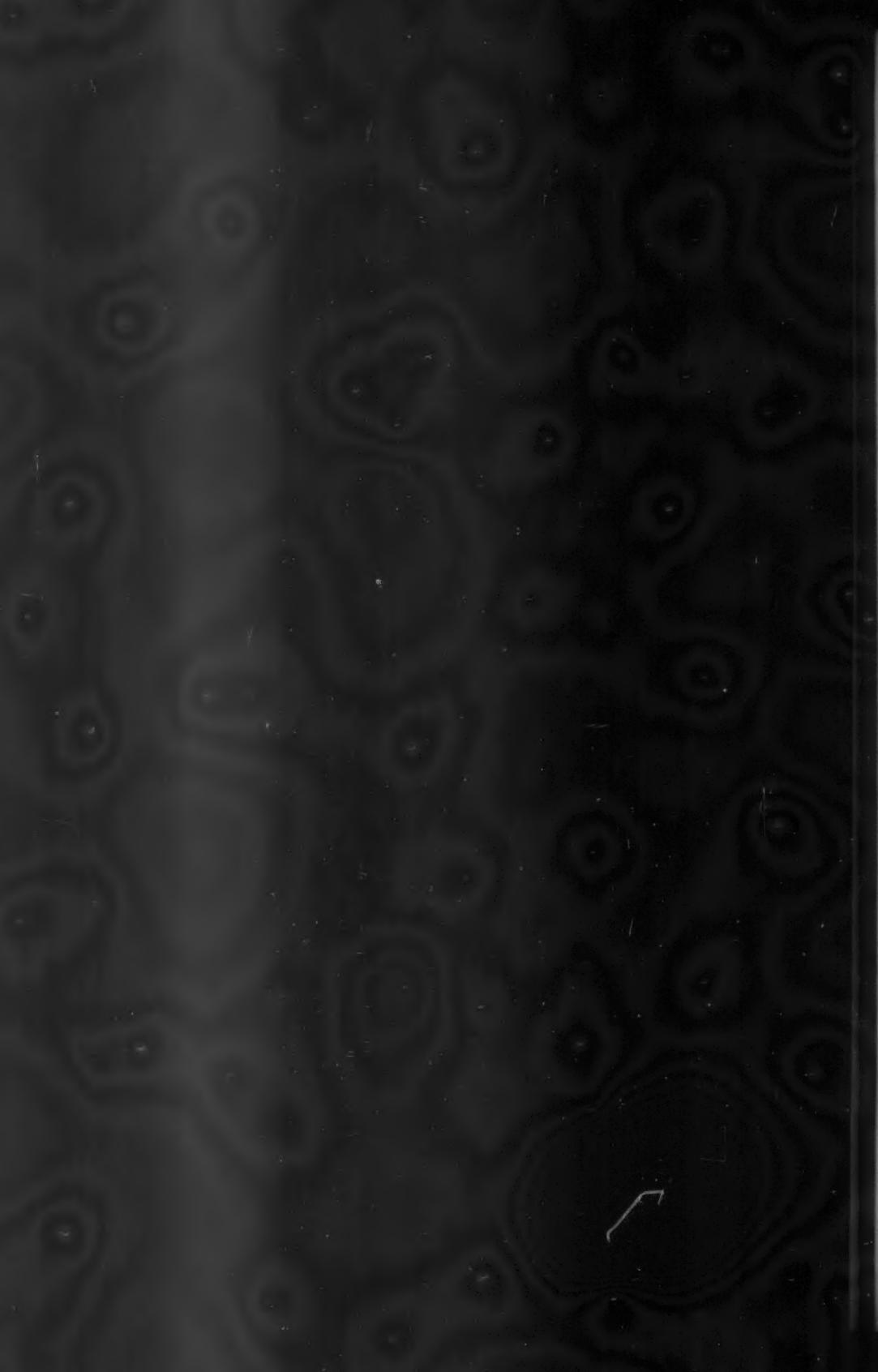
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CANADA







# The Public Health Journal

VOL. XIX

JULY, 1928

No. 7

## A Population Study

(NOVA SCOTIA)

A. C. JOST, M.D.

*Provincial Medical Officer of Health, Nova Scotia*

THE inadequacy of the crude death rate as a measure by which to make comparison between communities differing in population composition has long been recognized. The influence of sex, of age grouping and of still other factors may be so great that, unless taken into consideration, such a comparison may lead to wholly erroneous conclusions.

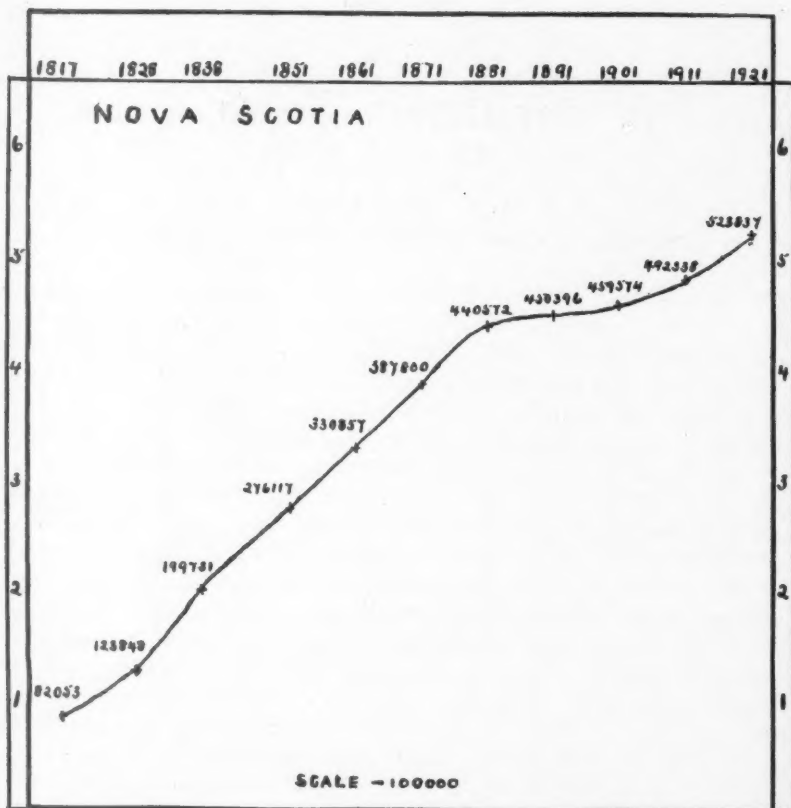
Nova Scotia's population is an apt illustration of this. The Province has had for many years a relatively high death rate, showing evidence of improvement during recent years, but higher than many of the Canadian provinces. To quite an extent, the explanation of the height of the rate is to be found in the fact of its unusual age composition and the preponderance in its population of an unusual number of persons of the higher age groups.

This is at once apparent if the census figures are examined, and if the examination extend over the figures of a number of years, it is possible to follow the steps by which the present condition has been reached. Not all the censuses were taken in the same way, nor was wholly comparable information secured in all. For this reason it is well to divide them into those of the earlier and those of the later years taking the census of the year 1851 as the last of the first group.

|           | Year | Population |
|-----------|------|------------|
| Census of | 1817 | 82053      |
|           | 1828 | 123848     |
|           | 1838 | 199731     |
|           | 1851 | 276117     |

This evidently was a period of very rapid increase of population, an increase of over three-fold in thirty-four years. The rate of increase was greatest in the central period, that between 1828 and 1838. The yearly increase during the first period was about 4.7 per cent; during the central period about 6.1 per cent and during the third period about 3.3 per cent. It plainly was Nova Scotia's growing time, when to the natural increase an increase due to immigration was being superimposed.

## POPULATION 1817-1921



Of the age composition of the population at the time of the first two censuses no record has been found. The division into sex and age groups which was made in 1838 was an unusual one, according at least to present day practice. The reason for the selection of such a grouping is not now obvious, nor did the attempt to procure it for the whole province seem to have succeeded. The data sought was the number of persons of each sex, subdivided as to their inclusion into the age groups 0 to 6, 6 to 14 and over the age 14. There are on record these figures so far as fourteen counties are concerned, those in detail for Cumberland, Antigonish, Victoria and Inverness counties not having been found, though the totals seem to have been procured. These four counties apparently had a population of 30,675. In the remaining fourteen there were 169,056 persons, divided as follows:

| Sex    | 0-6   | 6-14  | Over 14 | Total |
|--------|-------|-------|---------|-------|
| Male   | 19056 | 19208 | 49591   | 87855 |
| Female | 18403 | 17484 | 45314   | 81201 |

169056

The preponderance of males may be taken of evidence of immigration since it was more marked in the higher age groups. The proportion of males to females (108 to 100) may be compared with the proportion disclosed in the census of 1921, (103 to 100).

If we assume that the age and sex distribution of the whole population (199,731) was much the same as that of the portion of which we have full details (169,056) the age composition of the population by sex as it was in 1838 is here compared with the population divided into the same groups in 1921

|      | Male  |       |         |        | Female |       |         |        |
|------|-------|-------|---------|--------|--------|-------|---------|--------|
|      | 0-6   | 6-14  | 14 Over | Total  | 0-6    | 6-14  | 14 Over | Total  |
| 1838 | 22513 | 22694 | 58591   | 103798 | 21742  | 20653 | 53538   | 95933  |
| 1921 | 33685 | 47716 | 182071  | 266472 | 35865  | 49525 | 175575  | 257365 |

We can best compare these numbers if they are expanded in each case, as if the total population at each census was 1,000,000.

|      | Male   |        |         |        | Female |        |         |        |
|------|--------|--------|---------|--------|--------|--------|---------|--------|
|      | 0-6    | 6-14   | 14 Over | Total  | 0-6    | 6-14   | 14 Over | Total  |
| 1838 | 112718 | 113619 | 293342  | 519679 | 108857 | 103422 | 268042  | 480321 |
| 1921 | 70031  | 91089  | 347572  | 508692 | 68466  | 86770  | 335172  | 491308 |

This shows very plainly the great difference in age composition and the great preponderance in the earlier population, as compared to the later, of persons in the young age groups, especially the first. The 0-6 age group forms more than 220,000 per million in the first as opposed to fewer than 140,000 per million in the second census. The 1921 figures are the result of birth rates approximating 24 or 25 per thousand of population during the five years previous to 1921; the birth rates previous to 1838 must have approximated between 35 and 40 to have brought about those figures.

The census of 1851 is still more informative respecting detail. Six age groups by sexes are given. It is possible again to arrange the 1921 figures into the same groups for comparison, and also to expand both to 1,000,000.

| Age Group | 1851   |        | 1921   |        |
|-----------|--------|--------|--------|--------|
|           | Male   | Female | Male   | Female |
| Under 10  | 44000  | 43452  | 60996  | 59364  |
| 10-20     | 33791  | 33444  | 55286  | 53927  |
| 20-30     | 20277  | 22385  | 40843  | 41216  |
| 30-40     | 14615  | 14665  | 32896  | 30881  |
| 40-50     | 10616  | 10271  | 28583  | 25498  |
| 50 Over   | 14378  | 14223  | 47868  | 46479  |
|           | 137677 | 138440 | 266472 | 257365 |
|           | 276117 |        | 523837 |        |

## Censuses of 1838 and 1921 Expanded to 1,000,000

| Age Group | 1851    |        | 1921    |        |
|-----------|---------|--------|---------|--------|
|           | Male    | Female | Male    | Female |
| Under 10  | 159353  | 157368 | 116440  | 113328 |
| 10-20     | 122380  | 121123 | 105541  | 102948 |
| 20-30     | 73436   | 81071  | 77968   | 78675  |
| 30-40     | 52930   | 53112  | 62799   | 58953  |
| 40-50     | 38447   | 37198  | 54565   | 48676  |
| 50 Over   | 52071   | 51511  | 91379   | 88728  |
|           | 498617  | 501383 | 508692  | 491308 |
|           | 1000000 |        | 1000000 |        |

Several points here deserve comment. What one notices at once is the preponderance of females, a marked change apparently having taken place since the census of 1838. This of 1838 was seemingly affected by immigration so that the males preponderated to an extent of about 8 in each hundred; in 1851 males numbered about 99 to a hundred females. This is somewhat distinctive of an emigrating population rather than of one gaining by immigration. Another feature is apparently the great loss taking place in the age group 20-30. The 1851 population, outnumbering that of the 1921 by over 35,000 in a million in the age group 10-20, was outnumbered by over 2,000 in the age group 20-30. Here again emigration must be thought of, or some temporary absence involving the failure to be enumerated, though the effect of a high death rate among young adolescents, such as would occur were tuberculosis very prevalent—as we have reason to believe was the case—ought not be forgotten. Still a third feature to be noted is that even then an approach was being made to the present figures, in so far as persons of the youngest age group were concerned. While the age group up to 14 in the census of 1838 is not wholly comparable with that up to 10 in that of 1851, the proportion of the young was evidently dropping in the second enumeration.

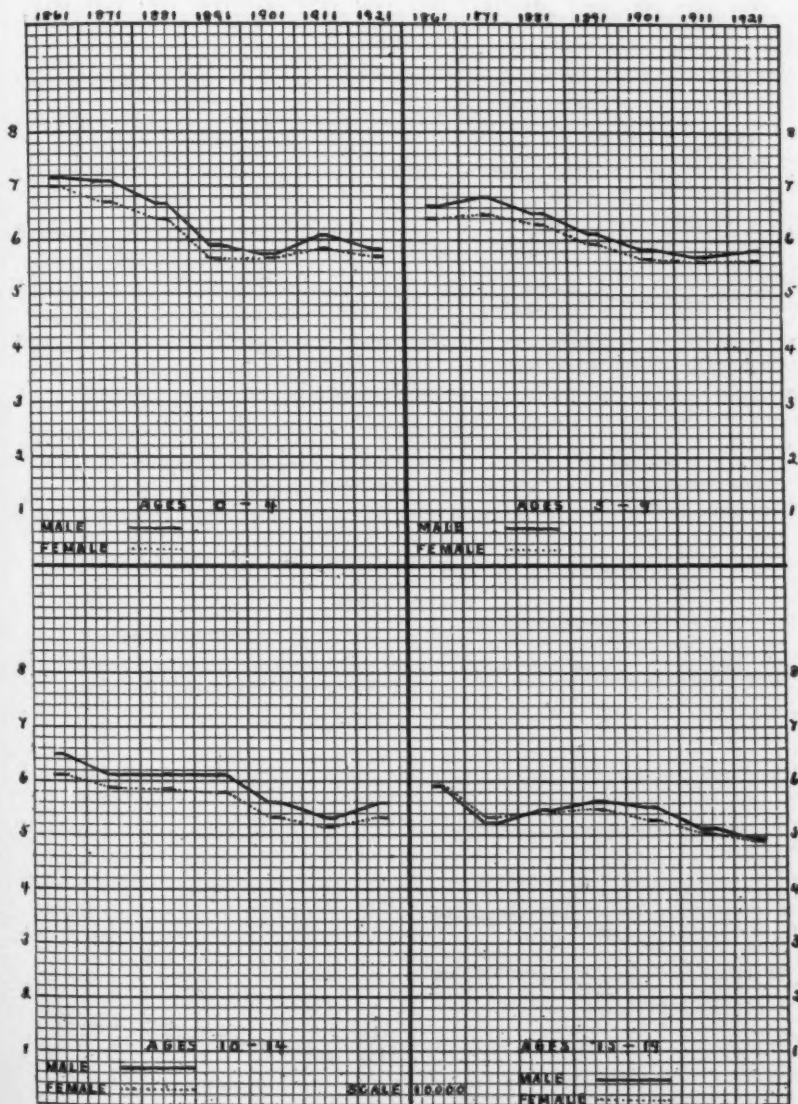
The group of later censuses includes that of 1861 and the decennial years since that time.

|      |        |      |        |
|------|--------|------|--------|
| 1861 | 330857 | 1901 | 459574 |
| 1871 | 387800 | 1911 | 492338 |
| 1881 | 440572 | 1921 | 523837 |
| 1891 | 450396 |      |        |

There has here been quite a marked slowing down of the population increase. We are now dealing with a period, however, where quite full detail is available. The 1861 census gives information of the number of persons in the age groups ending in 5 till age 20 is reached, and thereafter in the ages ending in tens. The 1871 census and those subsequent to it have a somewhat different basis of tabulation, so that it is possible to get information of the eleven age groups which are usually considered when standardization

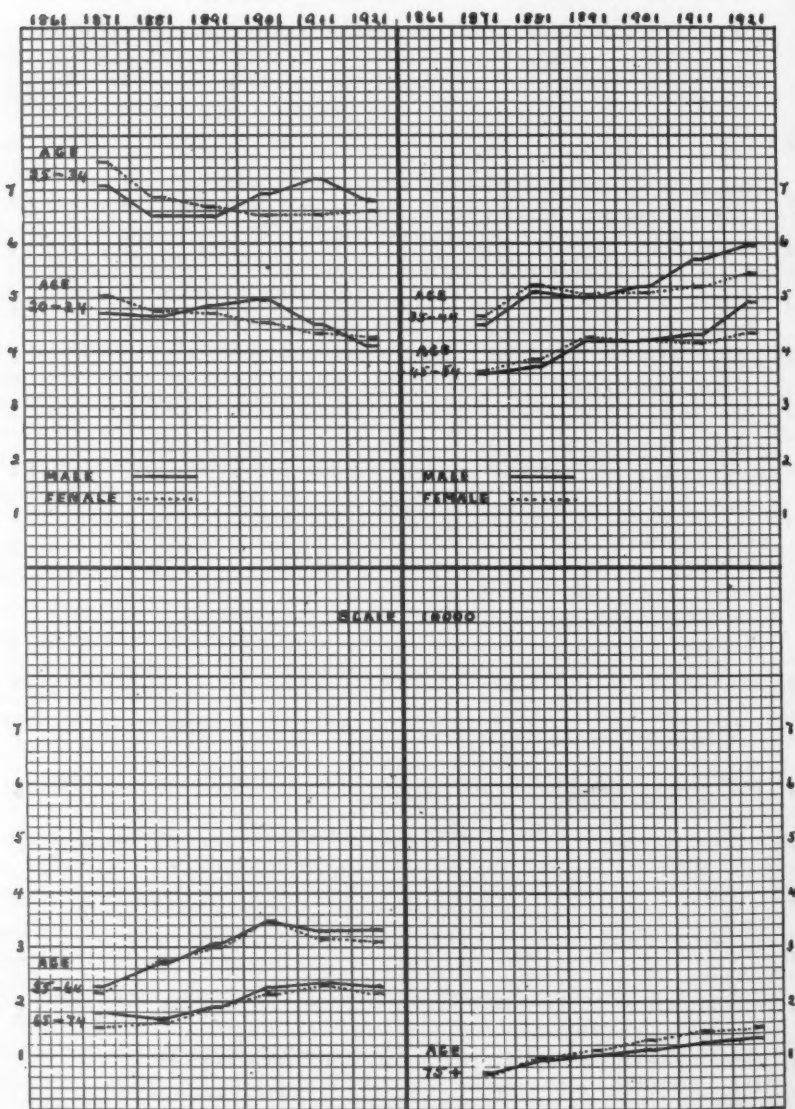
of a death rate by the indirect method is being undertaken. If now, the figures of each census are expanded *pro rata* so that the total in each case is 1,000,000, a comparison of the number of persons in each age group at each census is possible, and the change taking place in each period may be

### CHANGES IN AGE GROUP COMPOSITION OF POPULATION 1861-1921



charted. This has been done in the accompanying graphs. In all cases the number of persons whose ages were not given have been distributed *pro rata* among the different named groups.

### CHANGES IN AGE GROUP COMPOSITION OF POPULATION 1861-1921

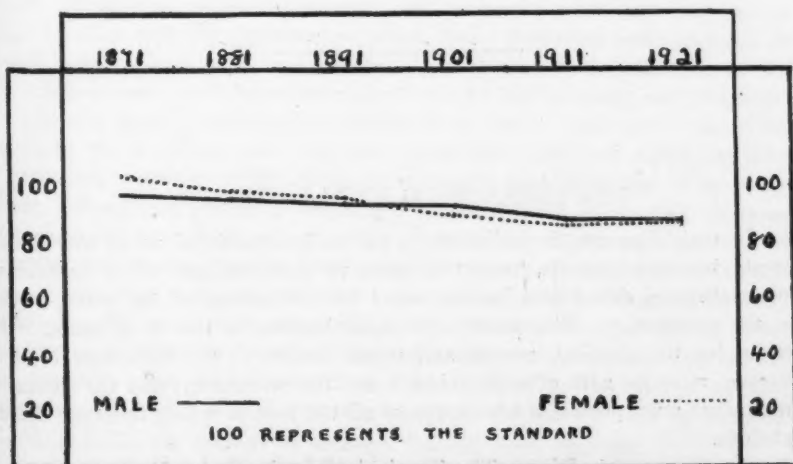




It will be seen that certain definite changes have been taking place. The numbers of persons per million in the age groups 0-4, 5-9, 10-14, 15-19, and 20-24 have quite constantly diminished, the greatest changes taking place in the younger age groups. The figures in the next highest group, that of individuals aged between 25 and 34, have been to all intents stationary for the latest four censuses. In the remaining groups there is also a well marked change, but in these the change has been one characterized by increase, not decrease. The latest census, that of 1921, possibly indicates that there has been a slowing down of the movement, though the regularity of the rise in the group aged 75 and over is quite striking throughout.

It will be remembered that in the process of standardizing a death rate, by the indirect method, a figure is obtained called the factor of correction, which is the measure of the difference of the population from that of the standard, represented by the figure 1.0. The standardized death rate is the crude death rate multiplied by the factor of correction. If now, for the different census years, the factors of correction are calculated, always against the same standard, it will be seen that the changes taking place in the census figures are accompanied by changes in the factors of correction. For the year 1861, the information is incomplete. In 1871 the Nova Scotia population conformed very closely indeed with that of the standard, in this computation the population of England and Wales for the period 1881-1890. The actual figure of the factor of correction was then 1.004, the population being as a whole slightly more favourable from the point of view of mortality than was the standard. That this was the case was due largely to the females, this

## ALTERATION OF FACTORS OF CORRECTION



group being, in comparison, of more favourable composition than was the male group. By the year 1881 the factors of correction for both males and females had dropped materially, that of the females showing the greater change. Thereafter the factors of correction fell quite continuously till 1911. This is the period during which the curve of population flattened out, as will be seen on the population chart.

The census of 1921 seems to indicate that a change has taken place. There was a gain in population which was at the rate of 0.64 per cent a year. The factor of correction altered very little, being 0.887 as opposed to 0.886 at the previous census. The rate of natural increase, that is the difference between births and deaths, was about 1.2 per cent a year, so that emigration was taking about half the natural increase, together with all the increase due to immigration. The birth rate was sufficiently high to have permitted a condition more or less approaching stabilization to have been reached.

Several interesting queries present themselves as a result of this study.

I. How much depleted is it possible for the central age groups to become without a condition being arrived at in the presence of which recovery within the population itself is not possible?

II. If a more or less stationary condition is met with in the presence of a birth rate of a certain height, what will be the effects, and, especially, how soon will the effects be observable, if there is a drop in this rate?

It appears as if the answer to these questions will soon be a matter of our experience.

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### THE ESSENCE OF SOCIAL HYGIENE

In social hygiene the individual is not to be considered as an individual merely, but as one of the group who make up the home and whose happiness and usefulness, determined by success or lack of success of the home, react on the community. The essence of social hygiene is that it is social. It works for the physical, mental and moral health of the individual in his personal relations with other individuals and the community, and the successful teacher must possess a knowledge of all the factors which influence these relations.

*Wood, The Teacher's Part in Social Hygiene, p. 3.*

# The Physician and Industrial Disease\*

PROFESSOR V. E. HENDERSON

*Department of Pharmacology, University of Toronto*

I HAVE been asked to speak this evening on the subject of industrial disease, but I understand that I am not supposed to limit my remarks to those diseases which may be regarded as due specifically to industry, such as the industrial intoxications or such infections as anthrax, but rather to deal with disease in industry.

In the first instance we may consider those diseases which directly arise from the workman coming in contact with a substance of a poisonous nature, or substances not to be regarded as in themselves poisonous, but which nevertheless under the conditions present in the particular industry give rise to disease. I think there is no phase of disease in industry less appreciated by the general practitioner, and quite naturally so. May I illustrate what I mean? I was travelling in a railway train with a doctor from a town where I knew there were large bread, biscuit and candy manufactures. I asked him if he saw many cases of industrial intoxication; he said, "No, none whatever." I then asked him if he saw many cases of Bakers' Itch. "Yes," he said, "I have seen cases that I think might be called Bakers' Itch; at least that is what the men called it." I asked him if he had seen eczematous conditions among the girls in the candy factory. Again he replied in the affirmative. But he did not regard these conditions as industrial intoxications. I asked him if he had ever been over the plants and seen the conditions under which these employees worked. He said not. I am sure that had he been familiar with the processes in which these employees were engaged he would have realized very readily some of the factors in the causation of the two diseases and would have been helped in both his treatment and prognosis.

In this growing industrial province there are a great many industries in which the workman may come in contact with lead, and there has been a great improvement in the ability to recognize lead poisoning at an early phase. Indeed, lead poisoning should be recognized in the interests of employee and employer at a stage where the symptoms are slight, such as lack of appetite, colic or constipation, possible blue line and normal erythrocytes and haemoglobin but with stippled red cells. I doubt if a diagnosis is fully justified at this early stage unless the physician is quite sure that the employee in question is coming in contact with lead under such conditions that it may be absorbed. Not all painters to-day are exposed to the danger of lead poisoning. Indeed it is true that relatively few of them are now so exposed.

\*Read before the Academy of Medicine, Toronto, April 10th, 1928.

The physician, to make an early diagnosis, must have a real and assured knowledge of the conditions of the man's employment. In fact, he should see these for himself and not depend upon hearsay evidence.

One might repeat precisely the same remarks in regard to benzol poisoning whose diagnosis in the early stages has been put on a very firm footing. Cases of arsenic and mercury poisoning are rare, and indeed early diagnosis of arsenic poisoning depends even more clearly upon the knowledge of exposure.

Even with the aid of x-rays a diagnosis of silicosis or pneumoconiosis should only be made in conjunction with a knowledge of the conditions under which an employee labors. Not every man employed in a mine, such as our gold mines in Northern Ontario, is equally exposed to the dangers of silicosis.

The regulations of the government have made phosphorus poisoning extremely rare in industry, and ankylostomiasis and anthrax are also rare in this province, though a diagnosis of cases of the latter in the early stages is greatly assisted by a knowledge of employment.

There are, however, a host of less well defined diseases, and especially skin affections, where a knowledge of the exact employment of the worker is important in making a diagnosis. In a furniture factory skin affections may occur due to the character of the wood employed, for example the well known satin-wood or teak dermatitis. Or again, skin lesions may be due to the use of turpentine and various solvents. Indeed, it may be said that without an expert acquaintance with the work of the employee and a thorough knowledge of the poisoning caused by a great many rare substances, a real diagnosis is impossible.

What has been said above in regard to the industrial intoxications makes it clearly evident that in all these types of disease a knowledge of employment and of the peculiar characteristics of the toxic agents employed is absolutely essential to treatment, prognosis and cure. But the intoxications make up only a small fraction of the diseases occurring in industry or of the accidents arising out of a man's employment. Even in the case of ordinary petty accidents, treatment depends to a certain extent on knowledge of the employment of the workman. Let me give one or two concrete examples. Any wound occurring from a spicule of bone or from a knife, in one of the dressers in a pork packing factory, should be treated very much more radically than one occurring from a splinter of steel. The pork packer is coming in contact with numerous bacteria, often of a high degree of virulence and extremely dangerous, such as gas gangrene, and requiring very vigorous antiseptic measures. The ordinary superficial application of iodine may indeed increase the hazard owing to tending to seal over the mouth of the wound. There is no doubt that in this case expert knowledge of the patient's employment is of extreme importance. In other petty wounds a knowledge

of the grease with which the workman's hand is smeared and the best means of its removal is a necessary step to vigorous antiseptic measures.

Further, it is not uncommon to find that a knowledge of a man's employment will often enable the physician to estimate the patient's general or particular resistance to infection and take adequate steps to rectify these deficiencies in general health conditions which are so essential to a speedy cure. I have been told by a physician that he is satisfied that amongst employees in a certain plant a more rapid cure of petty wounds is achieved by the administration of calcium chloride per os. This does not seem to me at all astonishing, but on the other hand I think it would be rash to generalize, and I do not believe that the administration of calcium chloride to patients suffering from relatively minor wounds would prove beneficial in all instances. This indeed is one of the cases where the application of a broad knowledge of the conditions of employment can be employed by the thoughtful physician to the cure of industrial disease. It was an application of the same knowledge which lead to the suggestion of the internal administration of calcium salts to sufferers from nickel rash or to those exposed to the absorption of nickel in refineries or in electroplating, which has been so successful.

What I have said about petty accidents applies to a very large extent to accidents of a major character. The general resistance of the patient and the character of the possible infective agents are extremely important if the best possible treatment is to be given to expedite a cure.

There is, however, a further point which particularly applies to the two types of disease to which I have already referred, namely, intoxications and minor or major accidents, which must be considered by the attending physician, namely, the question as to when the patient can be returned to employment. If the physician is unaware of the hazards to which the patient is exposed or the amount of physical exertion or mental alertness required of the employee in his normal employment, he can do nothing further than protect the patient by refusing to return him to employment until he is as nearly normal as possible. This lack of knowledge in many cases undoubtedly prolongs convalescence and is not infrequently a danger to the workman, as it tends to develop in him a spirit of distaste for work, and so sows the seeds from which arise malingering and semi-neurasthenic conditions. May I be allowed to illustrate the difficulties in regard to this phase from a petty experience of my own? During the War I was serving in a large Internment Camp as officer in charge of prisoners' labor, and spent my day in visiting the working parties in the field. For two or three weeks I relieved the medical officer but continued my other duties. One morning a workman whom I knew by sight as an active energetic man appeared on sick parade "sick of the back". He had a precisely localized point of tenderness in the lumbar region, and on careful manipulation a slight area of hardness could be felt in the relaxed muscles. I learned that he had made a particular effort

the previous day to throw a tree in the right direction and had complained of pain afterwards. Some ten days after he had completely recovered and returned to work, the morning was foggy and threatening rain. This man appeared on sick parade with the same complaint. He had no localized area of tenderness, or rather he localized the tender area in at least four or five different places, and I directly returned him to work. This he took with a smile and I had no further complaint from him. Knowing the man and his employment gave me an assurance in dealing with his case which I would otherwise have lacked. The family physician in dealing with such types of case is in a difficult position if he refuses to regard his patient as ill when he is convinced that he could return to work. A knowledge of the man's exact employment will enable the physician in these cases both to assure and to argue with his patient when he is able to return to work, or to decide that he is not as yet able to do so. But in many cases the employee might be perfectly able to carry on some lighter labor, thus gaining a full day's wages, keeping him occupied, and reaccustoming him to working, or, in the case of an industrial intoxication, be returned to full employment equally vigorous where he was not exposed to the hazard which had caused his original complaint. But the physician can only arrange such a return to lighter employment if he knows the conditions in the plant and is in close touch with its directing personnel. Yet such an action on his part is in the interests of employee and of the industry.

Further, too, if the physician is in the employ of the industry he will be able to prevent many petty accidents or mitigate their seriousness. For example, a run of petty infections of a certain type may be due to the carelessness of a workman on whose hands there is petty infection which leads to every subsequent handler of that same piece of work being in danger of the same infection. No physician seeing a series of cases of this type could fail to ask himself their cause, and by inspection determine it and eliminate it from the plant. Further, owing to the nature of their work, employees may be exposed in greater or less degree to what we might call ordinary illnesses. For example, in those employees who are exposed to high temperatures or humidity with physical exertion, the underclothes become wet, and passing into the open air without change undoubtedly contributes to the incidence of infections of the respiratory tract. This is the type of case where the exact knowledge of the physician might do much to decrease disease by his persuading his patient to change his clothes before going out, and by interesting the management in making this change possible. Naturally this condition is difficult for the physician who sees individual cases from any plant, but the larger the proportion of the employees he sees from a certain plant the better his opportunity to estimate the hazards to general health due to the character of the employment.

It will be noticed that I have here touched upon general disease in



industry, and I feel sure that general disease which cannot be specifically referred to employment is the cause of more lost time and lost wages than all the other cases put together. We all realize the hazards caused by the presence of one woman amongst a group of employees, who is suffering from open tuberculosis, but a similar hazard is imposed on all the other workers by the sufferer from a frequently recurring cold in the head. A physician reported recently that in a certain office with a large number of female employees, the staff was decimated by petty epidemics of so-called influenza. A rigorous preventive régime, which consisted in sending every sufferer from cold in the head home at once, and immediate use of nasal sprays or douches on the part of any with whom she had come in contact, and the gospel of health preached to the employees, reduced this problem to negligible proportions. There is no doubt that the workers can gain much by just such steps and preaching, if given by a medical man who speaks with authority.

The tremendous wastage of time and money incurred by industry and its employees can only be reduced by the efforts of the medical profession. But the medical profession can only succeed in reducing the time loss by intoxications and petty accidents, and reduce the usual eight days lost by employees due to general sickness to the minimum of two days, which is often attained, if the physician dealing with the employees of any industry is closely in touch with an intelligent and interested management and has full facilities to see the men at work. Further, he must become an expert in the peculiar health hazards of the particular industry and the economic conditions existing in it. Only under these conditions can he contribute his full share to reducing this heavy burden.

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## CONFERENCE and 17th ANNUAL MEETING

*CANADIAN PUBLIC HEALTH ASSOCIATION*

*WINNIPEG OCTOBER 11th, 12th, 13th, 1928,*

The Executive Committee arranged the Annual Meeting in Winnipeg on October 11th, 12th, 13th, 1928, in order that many might conveniently attend the meeting of the American Public Health Association in Chicago, October 15th-19th.

# Case Report of Undulant (Malta) Fever\*

W. P. WARNER, M.B.

**T**HE patient, B.R., an Italian, male, aged 22, was seen first on April 22nd, 1928. He stated that he had come to Canada from Italy one year ago and had been sick for the past eight months with periods of fever, drenching sweats, loss of strength, vague aches in his joints, occasional rigors, cough with sputum and some loss of appetite. He had consulted many physicians, and had been in one hospital for two months last autumn with a diagnosis of typhoid fever with four relapses. He did not consider himself very ill, and for the greater part of his illness had not been confined to bed though quite unable to work. Previous history was negative.

*Physical Examination:*—He was thin, face flushed and he did not appear very ill. Temperature 103. Pulse 80. *Chest*—diminished resonance at left apex with increased bronchophony and broncho-vesicular breathing. No rales heard. *Abdomen*—spleen appeared to come one finger's breadth below the costal margin and was not tender. Examination was otherwise entirely negative.

*Laboratory Examination:*—Urinalysis normal. No pus present. Sputum examination—negative for tubercle bacilli. Blood—W.B.C. 6,000; R.B.C. 3,800,000; Hb. 80% (Sahli). Smear—showed a moderate secondary anaemia. Differential count—polymorphonuclears 40; lymphocytes 54; endothelial 6.

*X-Ray Examination:*—Stereoscopic plates of the chest showed minimal parenchymatous tuberculous infiltration at the left apex with thickening of the ascending bronchus on the right. Nothing abnormal in the mediastinum could be seen in the plates or by fluoroscopic examination.

A tentative diagnosis of tuberculosis was made but the patient was sent to hospital for observation, as we were unable to ascribe an eight months' illness, with high fever, to such a small area of tuberculous involvement showing no signs of activity.

*Progress:*—During the first week in hospital the patient showed marked remissions in temperature from 104 degrees to 99 degrees in an hour. With the drop in temperature, he experienced the most profound perspiration. He did not appear very ill and complained of nothing but the drenching sweats, slight loss of appetite and cough with sputum.

A few medium moist rales throughout the lungs became evident. Repeated urinalyses were negative, as also were repeated sputum examinations for tubercle bacilli and elastic tissue. White blood counts taken at various

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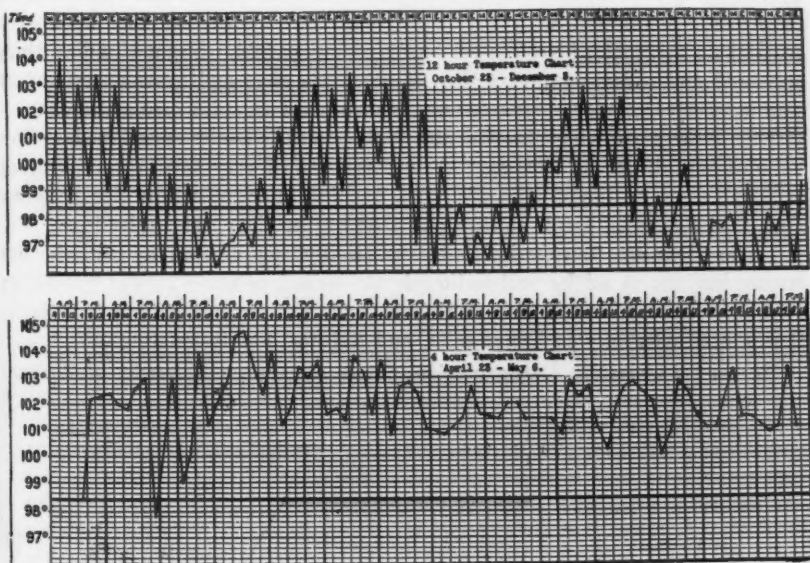
\*From the Colbeck Clinic, Welland.

temperature peaks were constantly about 6,000 with a relative lymphocytosis. The blood smears were searched for malaria parasites and the spirochaetes of relapsing fever, but none were found. The Widal test was negative for typhoid or paratyphoid organisms.

May 1st to 14th—The temperature did not go as high and there were no marked remissions. The temperature curve at this time did not show any undulant character; however, he had a fever from 100 to 102 degrees every day. A mild phlebitis developed in the right leg; this cleared up in four or five days. Later, he developed a painful, swollen elbow, which was not red. The pain and swelling disappeared in about three days.

All attempts to find a cause for his temperature were unsuccessful. Intravenous Neosol was given as a therapeutic test for relapsing fever, although the spirochaetes were not found in the blood smears and the course of the disease seemed too protracted for relapsing fever. The arsenic failed to influence the temperature so that relapsing fever as a diagnosis was practically eliminated. There were no signs of tuberculosis activity. A subcutaneous tuberculin injection gave a marked local but no systemic or focal reaction.

#### TEMPERATURE CHARTS AT TWO PERIODS IN THE ILLNESS



May 14th to June 1st—About May 14th we received, through the kindness of the hospital in which the patient had spent the months of November

and December 1927, his temperature chart and clinical records. The temperature chart was striking in that it showed an undulant or Pel-Ebstein type. This could be produced by a granuloma (Hodgkin's) Malta fever, or, very improbably, tuberculosis. No evidence of enlarged glands of Hodgkin's was found, although such, if in the abdomen, might not be demonstrable. The differential count, with no increase in endothelial cells, was not in keeping with a diagnosis of Hodgkin's disease. A tentative diagnosis of undulant (Malta) fever was made and blood was sent to the Connaught Laboratories and School of Hygiene, Toronto, with a request for agglutination with Br. abortus and Br. melitensis. The report is given below. The agglutination was repeated in the Laboratories of the Department of Health, Ontario. The diagnosis of undulant (Malta) fever was thus confirmed.

#### LABORATORY REPORT\*

D. L. MacLean, M.B.

Blood from the patient of the above report was received May 28. The serum was separated and the sterile clot put in a 50 cc. flask of dextrose broth and incubated aerobically at 37 degrees C. The serum was tested for agglutination with strains of Br. melitensis and Br. abortus. It gave complete agglutination with Br. abortus in a dilution of 1 in 200 and some agglutination in a 1 in 80 dilution with Br. melitensis. The culture of the blood clot showed no evidence of growth till ten days had passed. Slight clouding then appeared and a non-motile bacillus of moderate size, and gram-negative but staining very irregularly, was found. Subcultured to solid media the characteristic slowly growing (aerobically) pin point colonies developed. The films of subcultures on liver agar showed the typical very small gram-negative bacillus; those on blood agar showed a bacillus intermediate in size between that of the original broth culture and that of the liver agar subculture.

The organism, freshly isolated, was readily agglutinated by anti-abortus serum, but not at all by anti-melitensis or normal serum. It was grown in dextrose, maltose, lactose or saccharose, but did not utilize any of them. It produced alkalinity in litmus milk, and did not liquefy gelatine.

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\*From the Connaught Laboratories and School of Hygiene, University of Toronto.

# Montreal Anti-Tuberculosis and General Health League\*

J. A. BAUDOUIN, M.D., D.P.H.

THE year 1927 is the second complete year of our activities.

The area covered by the French Health Centre includes the two parishes of St. Catherine and the Sacred Heart.

According to the census made by the personnel of the school, in December, 1926, this area comprises a population of practically 19,000 persons—18,955 to be exact.

The great amount of work which is done in the interest of this population is easily seen by the following figures which cover all the year 1927.

23,292 visits were made to the homes in the district, which gives an average of 1,941 per month. These figures show an increase of 1,341 visits over the year 1926, or an average of 112 visits more per month. These numerous visits were made to 4,658 different cases, which number of cases is an increase of 1,719 over those of the year 1926.

These cases are divided as follows:—

|                      | <i>St. Catherine</i> | <i>Sacred Heart</i> | <i>Total</i> |
|----------------------|----------------------|---------------------|--------------|
| Ante-Natal.....      | 284                  | 196                 | 480          |
| Post-Natal.....      | 246                  | 201                 | 447          |
| New-Born.....        | 232                  | 189                 | 421          |
| Well Baby.....       | 771                  | 672                 | 1,443        |
| Pre-School Age.....  | 938                  | 485                 | 1,423        |
| School Age.....      |                      |                     | 190          |
| Tuberculosis.....    | 91                   | 38                  | 129          |
| General Medical..... | 56                   | 69                  | 125          |
| Total.....           | 2,618                | 1,850               | 4,658        |

Furthermore, in our different consultations, the total attendance for the year reached 10,357, an increase of 3,047 over the previous year.

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\*Report of the Medical Director presented at the Annual Meeting, March 20th, 1928.

This attendance is divided as follows:—

| <i>Consultations</i> | <i>St. Catherine</i> | <i>Sacred Heart</i> | <i>Total</i> |
|----------------------|----------------------|---------------------|--------------|
| Ante-Natal.....      | 543                  | —                   | 543          |
| Well Baby.....       | 4,430                | 3,784               | 8,214        |
| Pre-School Age.....  | 1,600                | —                   | 1,600        |
| Total.....           | 6,573                | 3,784               | 10,357       |

These varied and notable increases of the activities are explained by the fact that a year's work in the parish of the Sacred Heart is included for 1927, while there was only part of a year's work done there in 1926.

To accomplish this work, we have available a personnel composed of the four nurses of the League, a directress of nurses, her two assistants and the nurses who are taking the course in Public Health Nursing at the University of Montreal, who use the Centre for field and clinic training.

To understand better the extent of the work accomplished, as well as the results obtained, it is expedient to make a more distinct analysis of it, based on our various activities.

## I. CHILD HYGIENE

Child Hygiene comprises the following services:—Ante-Natal care, Post-Natal care, Care of the New-Born, Care of the Well Baby and of Children of School Age.

### 1. Ante-Natal Service:—

It has as its objective (by the supervision of expectant mothers) the decrease of maternal mortality as well as the reduction in the numbers of deaths attributed to congenital debility.

During the year 1927, the total number of expectant mothers under supervision was 417. To appreciate the value of this enrolment, we must compare it with the number of births in the year. This comparison gives the following results:—

| <i>Parishes</i>    | <i>Births</i> | <i>Ante-Natal Enrolment</i> | <i>Percentage of Births</i> |
|--------------------|---------------|-----------------------------|-----------------------------|
| St. Catherine..... | 265           | 225                         | 85.0                        |
| Sacred Heart.....  | 391           | 192                         | 46.2                        |
| Total.....         | 656           | 417                         | 62.0                        |

Now, if we recall that an enrolment of 25 per cent. is considered satisfactory, ours approaches the ideal. We can push this question further by comparing the number of ante-natal cases under supervision with the average number of births per month; we then get the following results:—



| <i>Parishes</i>     | <i>Births</i> | <i>Average number of ante-natal cases per month</i> | <i>Percentage of Births</i> |
|---------------------|---------------|---|-----------------------------|
| St. Catherine ..... | 265           | 70  | 26.4                        |
| Sacred Heart .....  | 391           | 32  | 8.2                         |
| Total .....         | 656           | 102   | 15.5                        |

In order to be useful, these enrolments ought naturally to be made as near the beginning of the pregnancy as possible. If we note the number of cases enrolled in the course of the first four months of pregnancy, we get the following result:—

| <i>Parishes</i>     | <i>Total enrolment</i> | <i>Enrolment during the first four months</i> | <i>Percentage of the total enrolment</i> |
|---------------------|------------------------|---|--|
| St. Catherine ..... | 225                    | 128   | 57.0                                     |
| Sacred Heart .....  | 182                    | 49  | 27.0                                     |
| Total .....         | 407                    | 177   | 43.5                                     |

Besides the visits made to all these cases, the Centre maintains a consultation which is specially designed for these cases. The Ante-Natal consultation gave, during 1927, the following results:—

| <i>Parishes</i>     | <i>Cases Enrolled</i> | <i>Attendance</i> |
|---------------------|-----------------------|-------------------|
| St. Catherine ..... | 75                    | 283               |
| Sacred Heart .....  | 23                    | 103               |
| Others .....        | 36                    | 157               |
| Total .....         | 134                   | 543               |

We thus see that 33 per cent. of our expectant mothers in St. Catherine's parish and 12 per cent. in Sacred Heart parish have benefitted by the consultation. But the services rendered by the nurses to these expectant mothers do not stop with the visits made in the homes, or with the attention given at the consultation, since our report shows that in St. Catherine's parish, 141 out of a total of 225, which is 63 per cent., and in Sacred Heart parish, 77 out of 182, which is 42 per cent. of expectant mothers enrolled with us, have, on the recommendation of the nurses, consulted a family physician.

All this work, which shows an appreciable increase over that of the preceding year, has given its results since, with 407 births registered, we have had to deplore only two deaths from puerperal causes.

However, our satisfaction is far from being complete, since even today the deaths caused by congenital debility are too numerous, as we will show directly.

*2. Pre-Natal Service:—*

Every Monday, the births which took place in the course of the preceding week are taken from the parish registers by the nurses, who hasten to visit the new mothers to render them all possible service in conformity with the directions given by the family physician. In the course of the year, this service gave the following results:—

| <i>Parishes</i>    | <i>Births</i> | <i>Mothers Visited</i> | <i>Percentage of Total Births</i> |
|--------------------|---------------|------------------------|-----------------------------------|
| St. Catherine..... | 265           | 233                    | 88.0                              |
| Sacred Heart.....  | 391           | 191                    | 49.0                              |
| Total.....         | 656           | 424                    | 65.0                              |

If we reserve a certain number of births that take place in institutions situated outside of our territory, it will be agreed that this service is extended virtually to all our mothers, at least in St. Catherine's parish.

*3. Service for the New-Born:—*

In the course of their visits to the new mothers, the nurses occupy themselves also with the new-born. These visits, repeated daily for the first week, then once a week, cover the entire first month. They give the following figures:—

| <i>Parishes</i>    | <i>Births</i> | <i>New-Born Visited</i> | <i>Percentage of Total Births</i> |
|--------------------|---------------|-------------------------|-----------------------------------|
| St. Catherine..... | 265           | 218                     | 82.                               |
| Sacred Heart.....  | 391           | 181                     | 46.                               |
| Total.....         | 656           | 399                     | 60.                               |

The extension of this service, particularly in St. Catherine's parish, sufficiently shows its importance by the contribution that it makes to the campaign carried on against the too numerous deaths that may happen soon after birth.

*4. Well Baby Service:—*

This group includes the infants from one month to two years. We have the following figures for it:—

| <i>Parishes</i>    | <i>Avg. No. Babies under Active Supervision</i> | <i>Population less than 2 yrs. in Dec. Census</i> | <i>Percentage of population less than 2 yrs.</i> |
|--------------------|---|---|--|
| St. Catherine..... | 350   | 358   | 98.  |
| Sacred Heart.....  | 364   | 500   | 73.  |
| Total.....         | 714   | 858   | 83.  |

The supervision exercised is very extensive. It reaches all the children in this group in St. Catherine's parish and three-fourths in the Sacred Heart

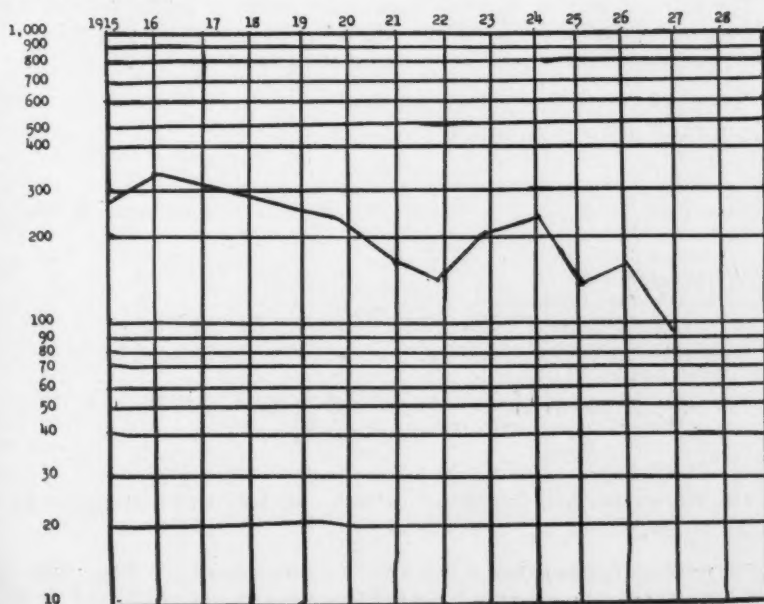
parish. It is also very intensive, since it comprises at least one visit made to each child each month. Moreover, the mothers are urged to bring their babies in to the consultations which are held especially for them. The success which has crowned the efforts of our visiting nurses may be deduced easily from the following figures:—

| <i>Parishes</i>     | <i>Baby Consultations</i> |                         |
|---------------------|---------------------------|-------------------------|
|                     | <i>Total Enrolment</i>    | <i>Total Attendance</i> |
| St. Catherine ..... | 338                       | 4,430                   |
| Sacred Heart .....  | 240                       | 3,784                   |
| Total .....         | 578                       | 8,214                   |

The review of our enrolment shows then this year that half of the number of the babies of our two parishes come to the consultations, and that the other half have, at their disposal, only the nurses' visits. One cannot establish more eloquently the primordial importance of these visits made to the homes by qualified nurses, which contribute to the protection of the health of our little ones and the campaign against infant mortality.

Finally, all these activities displayed by the doctor in the consultation and by our nurses have given us results which we consider very encouraging as the following graphic and tables show:—

Rate per 1,000 Births



## ST. CATHERINE'S PARISH

## INFANT MORTALITY

| <i>Year</i> | <i>Births</i> | <i>Deaths from 0 to 1 year</i> | <i>Rate of Infant Mortality</i> |
|-------------|---------------|--------------------------------|---------------------------------|
| 1915.....   | 344           | 94                             | 281                             |
| 1916.....   | 310           | 94                             | 303                             |
| 1917.....   | 298           | 82                             | 275                             |
| 1918.....   | 327           | 86                             | 263                             |
| 1919.....   | 308           | 76                             | 247                             |
| 1920.....   | 324           | 72                             | 222                             |
| 1921.....   | 200           | 47                             | 156                             |
| 1922.....   | 264           | 39                             | 148                             |
| 1923.....   | 274           | 56                             | 204                             |
| 1924.....   | 273           | 60                             | 220                             |
| 1925.....   | 265           | 34                             | 128                             |
| 1926.....   | 240           | 37                             | 154                             |
| 1927.....   | 265           | 24                             | 87                              |

The year 1927 has been the best that St. Catherine's parish has ever had. It shows, at the same time, an increase in the number of births and a decrease in that of the deaths, which is the most convincing demonstration that it is possible to furnish.

The figures based on the work done in the parish of the Sacred Heart are not yet so favourable because the work there has not yet gone so far as that in St. Catherine's parish, and it was begun at a later date.

The causes of death which we note show us, however, that we have not yet fully realized our objective. These causes are as follows:—

| <i>Causes</i>                          | <i>St. Catherine</i> | <i>Sacred Heart</i> | <i>Total</i> |
|--|----------------------|---------------------|--------------|
| Gastro-Enteritis.....                  | 6                    | 18                  | 24           |
| Congenital Debility.....               | 8                    | 19                  | 27           |
| Diseases of the Respiratory Tract..... | 3                    | 6                   | 9            |
| Contagious Diseases.....               | 1                    | 5                   | 6            |
| Other Causes.....                      | 5                    | 13                  | 18           |
| Unknown Causes.....                    | 0                    | 1                   | 1            |
| Total.....                             | 23                   | 62                  | 85           |

Gastro-enteritis and congenital debility are still the leading causes of infant deaths.

To combat gastro-enteritis, we insist on breast-feeding. The results of these efforts are shown by the following figures:—

*St. Catherine's Parish*

Percentage of babies benefiting by breast-feeding:—

| Age              | Year |      |      |
|------------------|------|------|------|
|                  | 1925 | 1926 | 1927 |
| 0—3 months.....  | 56   | 65   | 66   |
| 0—6 months.....  | 54   | 41   | 35   |
| 0—9 months.....  | 29   | 35   | 25   |
| 0—12 months..... | 22   | 28   | 18   |

It would thus appear that two-thirds of our babies benefit by breast-feeding during their first three months, that is to say, during the most critical period of their lives. As one notes also, there is a decrease which is more and more marked after the first three months. And yet, we understand all the need there is to maintain breast-feeding since, again this year, all our deaths by gastro-enteritis occurred in the group of babies who were being bottle-fed, corroborating the unanimous opinion of pediatricians. Our statistics preach strongly in favour of breast-feeding.

Congenital debility has become the principal cause of our infant mortality. It depends most often on prematurity, which goes to show the importance that it is necessary to accord the ante-natal service. Indeed, the best means of campaign against congenital debility consists in the medical supervision of our expectant mothers. We have seen just now the services that are rendered to them.

#### 5. *Service for Children of Pre-School Age:—*

This group includes children from 2 to 7 years. We know how many of these children are subject to diseases of nutrition, physical defects and contagious diseases. Therefore, it is necessary to protect these children by advice given in the homes and at the Consultation.

During the year 1927, this group furnished the following figures:—

| Parishes           | Avg. No. pop., 2-7 yrs.<br>under active supervision | Number found in<br>Census, Dec. 1927 | Percent. of No.<br>found in Census |
|--------------------|---|--------------------------------------|------------------------------------|
| St. Catherine..... | 519   | 680                                  | 76.4                               |
| Sacred Heart.....  | 156   | 1,103                                | 14.1                               |
| Total.....         | 675   | 1,783                                | 37.8                               |

Three-fourths of this group in St. Catherine's parish are known to our nurses and are visited regularly. This activity is naturally less developed in the Sacred Heart parish where we have worked a shorter time.

The consultation which is held especially for these children gives the following results:—

| <i>Parishes</i>    | <i>Enrolment</i> | <i>Attendance</i> |
|--------------------|------------------|-------------------|
| St. Catherine..... | 119              | 896               |
| Sacred Heart.....  | 44               | 254               |
| Others.....        | 77               | 450               |
| Total.....         | 240              | 1,600             |

## II. CONTAGIOUS DISEASES

Two diseases, tuberculosis and diphtheria, are the object of our special attention.

### 1. *Tuberculosis*:—

Since the stay at the University of Montreal of Professor A. Pettit, the Health Centre has been the headquarters for distribution of the vaccine against tuberculosis, known as "BCG".

During the year, 1927, the number of vaccinations and re-vaccinations given shows the following data:—

| <i>Parishes</i>    | <i>Vaccinations</i> | <i>No. re-vaccinated<br/>at end of year</i> | <i>Number eligible to be re-vaccinated<br/>at end of year, who were not</i> |                |             |             |
|--------------------|---------------------|---|---|----------------|-------------|-------------|
|                    |                     |   | <i>Moved</i>  | <i>Refused</i> | <i>Sick</i> | <i>Dead</i> |
| St. Catherine..... | 108                 | 28  | 8   | 5              | 0           | 3*          |
| Sacred Heart.....  | 56                  | 11  | 8   | 3              | 3           | 1*          |
| Others.....        | 157                 | 0   | —   | —              | —           | —           |
| Total.....         | 321                 | 39  | 16  | 8              | 3           | 4*          |

\*None of these deaths were due to tuberculosis.

Added to the 70 of last year, these 321 vaccinations give us a total of 391 new-born premunized against tuberculosis on the 1st of January, 1928.

Related to the number of new-born visited in our two parishes, these vaccinations give the following proportions:—

| <i>Parishes</i>    | <i>Percentage of vaccinations given<br/>on the number of new-born visited</i> |
|--------------------|---|
| St. Catherine..... | 49.5  |
| Sacred Heart.....  | 30.9  |
| Total.....         | 41.0  |



Last year, the proportion was 35 per cent. and this year 41, which, we are happy to record, shows progress. But we intend to continue our efforts to carry it even further and to have the greatest possible number of our new-born infants benefit by it.

Now, a new problem arises. Is it necessary to re-vaccinate the babies at the end of their first year? Doctor Calmette reserves the re-vaccination for "children born of tuberculous mothers or brought up in a family where there is a case of tuberculosis". However, in the district where we work, it seems to us that the offer of re-vaccination would furnish an excellent opportunity to take up contact with our families once more, and to assure us of the state of health of the child. Moreover, this second dose of vaccine, absolutely harmless as it is, is perhaps capable of rendering some service, since Calmette adds:—"Perhaps it may be that some bacilli succeed in passing the intestinal mucosa, so the length of the state of premunition should be notably prolonged".

The re-vaccination will have served us the purpose of better following our babies. It would indeed be interesting for us to know what has become of them since the administration of the vaccine. Unfortunately, it has been impossible to have complete information on this matter, on account of the frequent moving of our population and the large enough number (157) of vaccinations given outside of our area. The organization of a Central Office of Health Activities would render us most valuable service in this matter.

The review of our records permits us, nevertheless, to make, to date, the following re-classification.

|   |     |
|---|-----|
| In good health .....                            | 172 |
| Moved out of the district.....                  | 39  |
| Sick (Cases not connected with tuberculosis)... | 14  |
| Deaths (None from tuberculosis).....            | 9   |
| <hr/>   |     |
| Total .....                                     | 234 |

Moreover, our observations show us that 15 of the premunized babies have been in contact with active cases of tuberculosis. Of these 15 babies, 13 are actually in good health, one is dead from capillary bronchitis and the other is sick. The report of the visiting nurse states that the sick child coughs and that the doctor states one lung is diseased.

Our Tuberculosis service comprises also the home visiting of the sick residing in our district. These visits are made in collaboration with Bruchési Institute. The enrolment of new cases of tuberculosis made in 1927 gives the following figures:—

| <i>Parishes</i>     | <i>Average number of Cases of<br/>Tuberculosis under supervision</i> |
|---------------------|--|
| St. Catherine ..... | 29   |
| Sacred Heart .....  | 11   |
| <hr/>               |  |
| Total .....         | 40   |

Added to the patients already known, these new cases bring to 75 the number of tuberculosis cases that we have constantly under our supervision. This number constitutes about one-third of the estimated cases of tuberculosis in the district.

It would thus appear that we have not finished the difficult task of the discovery of these cases, but we intend to continue our research in this respect. Meanwhile, the nurses are concerned in rendering all possible service to the patients and their contacts.

The activities carried on in their favour may be summed up as follows:—

|   |       |  |       |
|---|-------|--|-------|
| Patients visited up to Jan. 1st, 1927.. | 89    | Cases hospitalized .....               | 10    |
| New Cases found during the year....     | 40    | Cases moved and lost .....             | 43    |
|   |       | Cases deceased.....                    | 9     |
|   |       | Cases discharged as not tuberculosis.. | 4     |
|   |       | Cases active on Jan. 1st, 1928.....    | 63    |
|   | <hr/> |  | <hr/> |
|   | 129   |  | 129   |

The great majority of our cases are recruited from amongst school children, those who have finished school, and adults from 25 to 45 years of age.

In the families of our patients, 339 contacts were found who live under the constant threat of frequent dangerous massive infection. Our visiting nurses urge contacts also to be examined either by their family physician or, in the case of indigents, at Bruchési Institute.

Of these contacts, 194 have not as yet presented themselves for this examination, while 145 have profited by it.

We can thus state that 52 among them have been found in good health. 72 are suffering from evident malnutrition, and 21 are actually under supervision. 12 of our children who were threatened with tuberculosis were admitted to Camp David of Bruchési Institute, and have benefited greatly by their stay in the country.

## 2. *Diphtheria*

Diphtheria is now in the group of diseases which ought to disappear completely because they are entirely avoidable. In fact, with the Anatoxin-Ramon, it is possible to give a permanent immunity against the disease. As Diphtheria is especially dangerous among children of pre-school age, it is on their group that our attention is fixed.

In 1927, 236 children received a first injection of toxoid (Anatoxin-Ramon). Of this number, 203, or 86 per cent., came back for their second injection, and of this group, 152, or 75 per cent., presented themselves for their third injection.

Four months after the last injection, the parents are again requested to bring their children to us for the Schick test which determines the state of immunity. To all those whose Schick test shows their immunity, the doctor in charge of the service gives a certificate. The number of these certificates given out to date is 108; however, there have been more than that number immunized. Taking for basis of calculation the ordinary results which the Schick test gives, we can estimate, as follows, the number of those immunized since the inauguration of the service; that is, since January, 1926.

| <i>Parishes</i>     | <i>Number Immunized</i> |
|---------------------|-------------------------|
| St. Catherine ..... | 193                     |
| Sacred Heart .....  | 60                      |
| Others .....        | 90                      |
| Total .....         | 343                     |

These figures show that 28 per cent. only for St. Catherine's parish, and 5 per cent. only for the Sacred Heart parish, of the children of pre-school age, can be considered as immunized against diphtheria. As one can note, our campaign of immunization is far from being terminated; to accelerate its progress, this service should be generalized throughout the city in the different consultations which are already functioning and which render signal service in the campaign against infant mortality.

#### PSYCHIATRIC CONSULTATION

The psychiatric consultation has given us this year the following figures:— 46 children, coming from various schools in the district, have had a psychiatric examination. Of this number, 29 were found to be normal and 17 showed a more or less notable retardation in their mental development. In three of these cases, the mental retardation was of three years and more.

Progress has been made towards securing special classes in the schools for children suitable for the special training and education such classes offer. Thanks to the generous collaboration of the Canadian National Committee for Mental Hygiene, our physician in charge of the psychiatric clinic was given the opportunity of making some very valuable observations in the schools of Toronto, and it was further arranged by the National Committee that the public health nurse attached to the clinic spend two months in the same schools in Toronto.

#### OTHER CONTRIBUTIONS

Outside of the activities above-mentioned, regarding the French Health Centre, it was my privilege, during the past year, to take part in the general movement of public health. My contributions to it may be summarized as follows:—

*1. Lectures:*

I delivered five lectures on different subjects dealing with preventive medicine to a combined audience of about 775.

*2. Federation of Health Agencies:*

The problem of co-ordinating the splendid work carried on in the field of public health by the various health agencies serving the French-speaking population in the city has been under study for a considerable period of time. During 1927, great progress has been realized, and it was my good fortune to share in the effort put forth along these lines and to assist in promoting this much-needed Federation.

*3. Health Articles:*

Final arrangements have just been completed regarding a monthly article bearing on Public Health to be published in the *Municipal Review* which is circularized to the 1,400 municipalities of the province. It is felt that messages along the lines of health appearing regularly would be helpful in promoting the cause of public health in the whole province.

## CONCLUSION

These various activities of the Centre furnish the following facts:—

1. The lowering of the infant mortality rate is the first indication of success gained by a Health Organization. The campaign against the most important of our causes of death becomes thus the first to be realized in practical results and the most economical.

2. Vaccination by means of "BCG" is simple and ought to be more general so as better to test its value in the campaign carried on against tuberculosis.

3. The immunization against diphtheria constitutes the leading means of conducting the campaign against diphtheria. Extended to all children of pre-school age, this proceeding would be able to eliminate this disease completely and preserve for us the lives that it takes away every year.

4. The contribution of mental hygiene to the great cause of health is eminently valuable since it can assist in increasing, in notable proportion, the great services that the population receives from it already.

I cannot end this report without giving, in due justice, the credit of whatever progress was realized during the year to the public health nurses, without whose efforts so little could have been accomplished in our work.

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## Canadian Public Health Association Conference and 17th Annual Meeting, October 11th, 12th, 13th, 1928, Winnipeg

THE Winnipeg Committee on arrangements, under the chairmanship of the Hon. Dr. Montgomery, Minister of Health, with the assistance of Dr. A. C. Douglas, Medical Officer of Health, are completing effective plans for the visit of the Association to Winnipeg, having the one objective of making our visit an outstanding occasion in the history of the Association. Details of the plans of the local Committee, together with a description of the many attractions of Winnipeg, will be published in later numbers of the JOURNAL.

The programme of the meeting is being arranged as a conference with ample provision for discussion. Section meetings will be limited to one meeting of the Public Health Nursing Section and one of the Laboratory Section. The following subjects will form the major portion of the three days of session:

The progress of the formation of full time health units (district, county, etc.) in Canada, including reports from New Brunswick, Quebec, Manitoba, Saskatchewan and British Columbia.

The relation of the practitioner to the practice of Preventive Medicine.

Report of special committee on the present regulations governing the control of communicable diseases in Canada.

Discussion of Milk, including the newer contributions to our knowledge of pasteurization, possible transmission of undulant fever, etc.

Public Health Nursing—papers dealing with the work of public health nurses and an ideal programme for a municipality of 5,000.

Round table discussion on Public Health Education,

Accuracy of Wassermann Findings,

Recent Advances in Sera and Vaccines,

Rural Sanitation.

The conference will be held in the Royal Alexandra Hotel and members are urged to make their reservations early, addressed directly to the hotel management.



DAVID ANDREW CLARK  
1867-1928

In the death of our esteemed confrere, Dr. D. A. Clark, who passed away suddenly in Ottawa on June 14th, the medical profession in general, and that section devoted to public health in particular, has lost one of its foremost exponents.

Dr. Clark graduated from Victoria College in 1890, and the University of Toronto in 1891. He started his medical career in Uxbridge, later moving to Toronto, where he built up an extensive practice. At the outbreak of the war, he proceeded overseas as medical officer to a brigade of artillery. He was wounded at the second Battle of Ypres, subsequently returned to England, and attached to the Staff of the Director General as A.D.M.S., with the rank of Lieutenant-Colonel, there filling an important executive post. He returned to Canada in 1917, and was appointed in 1919 Assistant Deputy Minister of Health under Dr. J. A. Amyot. For several years he has been particularly interested in the Canadian Government Immigration scheme, and was largely instrumental in putting in motion the present machinery for overseas inspection. At the beginning of the present year, he made an arduous tour of all European countries sending immigrants to Canada, visiting ports, and arranging facilities for the comfort as well as the examination of the immigrants. Dr. Clark was Vice-President of the Canadian Public Health Association and President of the Medical Alumni of his Alma Mater.

Beloved and respected by those with whom he laboured, he has passed to his sure reward. He is survived by his widow and one daughter.



# Editorials

## STERILIZATION AND MENTAL DISEASE

THE Legislature of the Province of Alberta has recently passed a law providing for the sterilization of persons whom it is proposed to release from mental hospitals and who might, in the opinion of a mental board, consisting of two medical men and two laymen, be safely discharged if the danger of procreation were eliminated. The patient may not be operated upon without his own consent if he is capable of giving it, or, if incapable, the consent of husband, wife, parent or guardian, as the case may be. In their absence, consent may be given by the Minister in charge.

It is said that high legal authority asserts that the law is constitutional, but this will doubtless be tested in the Courts before the Act comes into operation.

Laws of this kind have not been highly successful elsewhere. As far back as 1907 the State of Indiana passed a sterilization law and since that time fourteen other of the United States enacted similar laws. Subsequently, in five of these States, the law was declared unconstitutional, another repealed it, and in four others it became practically a dead letter. In 1922 there were only two in which it was utilized to any extent.

Laws of this nature are passed because of the increasing demand for accommodation in hospitals for the insane and because the item of expense in the care of these persons has become a serious strain on government finances. The advocates of sterilization claim that it would allow of many persons now confined in institutions being discharged and that propagation by these persons would greatly diminish the incidence of mental disease.

The Alberta bill differs from those in most places in that it applies not only to mental defectives but to all mental cases. Many of the latter recover, are released, and return to their usual vocations. But they may and do beget offspring and through inheritance the latter may become afflicted with mental disease. But such cases are not comparable with the mental defectives, and in the selection of cases it would be a difficult task to draw the line. This fact and the necessity of consent of someone, serve largely to limit the numbers whom, if the law stands, would be subjected to operation.

While it is admitted that inheritance plays a definite part in the production of mental defect and that many defective parents produce defective offspring it is doubtful if the proposal to sterilize defectives would have a very material effect in a solution of the problem.

The Central Association for Mental Welfare of England, which embraces all the leading medical and lay authorities on the subject, observed, through a period of ten years, some 34,000 cases of mental abnormality. As the result of this experience the Council arrived at the conclusion "that while sterilization might be appropriate in certain particular cases, its general adoption would have little preventive effect, that the freedom accompanying it would be attended with positive harm to the defectives themselves (through promiscuous sexual intercourse, &c.), that it would not result in any financial saving—that, in short, the procedure would benefit neither the defectives nor the community."

In view of such an authoritative statement the results of the new Alberta law will be watched with a great deal of interest.

#### USE AND ABUSE OF TREATMENT CLINICS

THERE are many articles written, many addresses given and many complaints heard about the use, or rather the abuse, of public treatment clinics by persons who are able to pay for the medical service they require. As long as clinics are conducted on the basis that they are, that is, to serve the indigent, such complaints will continue. No one, to our knowledge, has been able to establish an easy working scale which will sort out the one group from the other. Every case must be dealt with individually, and that is the reason why trained workers, with social knowledge and experience, are required to pass on the merits of the cases at the admitting desk. We have no quarrel with the physician who gives his services gratuitously and so expects that he will be protected by the clinic organization, and that the service which he offers will not be abused.

Admitting all this, the fact remains that a much more serious problem exists which attracts but little attention, and that problem is the large number of individuals in need of treatment, who do not apply for such treatment, or, if they do so, come at a late stage of the disease. It is a well-known fact that the great majority of tuberculosis and cancer cases come first to clinic when the disease is well advanced.

Early, proper treatment is fundamental in the prevention of disease. There is no doubt but that the reduction in deaths from diarrhoeas in children is due not only to the prevention of infection as a result of safe milk supplies, but to the prompt application for treatment in the early stages of the disease. More time and effort must be devoted to bringing cases under treatment early, and this should not be lost sight of in the effort that is made to prevent the abuse of treatment clinics.

## CHILD HYGIENE

H. E. YOUNG, M.D., AND J. T. PHAIR, M.B., D.P.H.

### RHEUMATISM IN CHILDHOOD

THERE seems to be a general unanimity of opinion among professional workers in the field of preventive medicine, as to the extremely important rôle that acute rheumatism plays in the rather pronounced, recent increase in the mortality rate from cardiac disease in all age groups. It is also generally conceded that measures tending toward the lessening of the incidence rate of rheumatic fever in children are of major importance, but at this point the unanimity of opinion seems to stop. There apparently exist widely divergent views as to the factors that are responsible for the disease, and equally as little uniformity in the suggested measures for its control.

Certain preconceived ideas are more or less strongly held by both the public and the medical profession, regarding the question. Presumably some of these ideas have little scientific foundation, while others have received the present endorsement of research workers and investigators. It would seem that the first requisite for any successful campaign against this disease, is a definite clearing of the air regarding the part played by the generally accepted etiological factors.

The writer has recently had drawn to his attention, three consecutive cases of rheumatic fever, one complicated by chorea, in children under

fifteen years of age, all who had had early tonsilectomy, in each case prior to the onset of the rheumatic attack; and, while no such small group of cases is sufficient warrant for discarding our previous theories as regards the possible rôle of the tonsils in acute rheumatism, it has a tendency to shake one's faith in the theory that early complete tonsilectomy is a reliable safeguard against this disease.

Dampness and exposure have, from time immemorial, been considered as etiological factors of considerable importance. The Report of the Medical Research Council of Great Britain, issued in 1927, shows dampness to have exerted a very slight influence on the incidence of the disease among the cases under investigation, while other authorities still emphasize the possibilities of this factor. Climatic conditions generally have likewise been apparently unduly censored for their part in the increase of this disease.

The theory of the infectivity of rheumatism was not, when first propagated, readily accepted by either the medical profession or the public, but there seemed to be no sufficient reason for questioning the correctness of the statements of workers of accepted reputation. Some recent investigators, however, belittle this theory and classify it as largely presumption. One

is frankly in a quandary, and it apparently behooves all health authorities to institute careful, painstaking inquiries in order that some specific

information may be obtained as to what actually are the causative and influencing agents in this rightly much dreaded disease.

## EPIDEMIOLOGY AND VITAL STATISTICS

A. C. JOST, M.D., AND NEIL E. MCKINNON, M.B.

### ANNUAL REPORT—SASKATCHEWAN

THE annual report of the Department of Health of the Province of Saskatchewan for the calendar year 1926, presented by J. N. Ulrich, M.D., Minister of Public Health, and M. M. Seymour, M.D., D.P.H., Deputy Minister, is a valuable record of Western activities in the various branches of public health work. In addition to reports of the Divisions of Communicable Diseases, Sanitation, Venereal Diseases and Laboratories, is a report on Hospital Management by F. C. Middleton, M.D., D.P.H. This gives very complete data of hospital costs, as to how they are divided in collection and distribution, of the number of patients and the character of disease treated, etc. These data supply very useful information to all engaged in hospital problems.

The population of the province according to the 1926 census was 821,042, the rural population being 578,476, and the urban (all places of 1,000 or over) 242,566.

The *birth rate* for 1926 was 25.2 per 1,000 population, an increase of 0.7 over the rate of 1925. Of the children born during the year 43.1 per cent of the mothers and 44.5 per cent of the

fathers were of British origin. The *infant mortality rate* of 1926 was 81.1.

The *general death rate* of 7.4 per 1,000, an increase of 0.6 over 1925, was the lowest of the provinces for the year 1926. The proportionately large percentage of people in the middle age groups in Saskatchewan partly accounts for the death rate being consistently lower than in the other provinces.

Diagrams showing the death rates for typhoid fever, measles, scarlet fever, whooping cough and diphtheria for the past twenty years are interesting and instructive. The death rates for measles, whooping cough and diphtheria would appear to have increased; that for scarlet fever does not show any marked change. With a population changing as rapidly as Saskatchewan, however, death rates, specific for age groups, would be a more reliable guide as to the trend of these diseases. A decrease in typhoid fever, however, from over 40 per 100,000 to less than 3 per 100,000 in twenty years, is striking and is not subject to the same influences of population changes as are the other diseases mentioned. Pneumonia, tuberculosis, influenza and cancer all show a definite increase in the past 20 years.

## UNDULANT FEVER

The importance of undulant fever as a public health problem is shown by recent reports. In the last number of this journal there were two preliminary reports covering six cases in Ontario. In the Journal of the American Medical Association of June 2, 1928, Sensenich and Giordano report seven cases from Indiana. In the Journal of the American Public Health Association, May 1928, McAlpine and Mickle of Connecticut report their findings with *Br. abortus* agglutination with the sera sent into the laboratory for Wassermann tests. From November 1926 to July 1927, 63 sera were found to give positive tests in a 1:100 dilution although double this number gave positive agglutinations in lower dilutions.

As noted in the Epidemiological Report of May 15th of the Health Section of the League of Nations, undulant fever is receiving attention in Europe as well as in America. In Denmark, reporting of undulant fever began in the latter part of 1927. In the first quarter of 1928, 62 cases were reported as compared with 27 cases of typhoid fever and 19 cases of paratyphoid fever. Since April 1927, all sera sent to the Institute for Widal tests have been examined for *Br. abortus* agglutination. Out of 2,500 specimens from April 1927 to April 1928, 222 gave, with *Br. abortus*, typical agglutination reactions in a dilution at least as high as 1:100. In 27 cases a blood culture was made and *Br. abortus* was cultivated from 18 of these. Among the 2,500 samples, 172 gave a positive Widal reaction

with typhoid organisms and 128 with paratyphoid B. The infection with *Br. abortus* in Denmark is, therefore, from this sample, more frequent than with typhoid or paratyphoid.

It is to be noted that during thirty-six weeks from April 3rd to December 10th the average number of cases diagnosed was 2.7; during the sixteen weeks from December 11th to March 31st (following the publication of an article on *Br. abortus* infection) the average number of cases rose to 7.8.

The age distribution of the 222 cases is interesting as none occurred under eight years of age and males suffered to a much greater extent than females, men from 15 to 40 years providing the majority of cases. Vaccine treatment appeared to be of some value.

The report of Sensenich and Giordano in the Journal of the American Medical Association is to be commended for its value from both the clinical and laboratory standpoint.

## TYPHOID FEVER AND LAKE BOATS

In the report of the Department of Health of the Dominion of Canada for the fiscal year ended March 31, 1927, is an important section on the pollution of the inland waters of the Dominion. This shows plainly the possibilities that exist of typhoid infection in connection with lake boats and, in fact, with trains. It brings up many points which in a casual inspection of a vessel under way or lying in the harbour might readily be missed. It cites, as definite evidence of the necessity of vigilance, instances

where typhoid was contracted on board and where death resulted. The following paragraph summarizes the findings and suggestions of the Department.

"Throughout past seasons a large number of analyses of drinking water from passenger vessels that attempt to treat lake water aboard ship have shown polluted water. Subsequent investigations have disclosed unsatisfactory treatment, either through carelessness or inexperience on the part of the vessel engineers. In view of the satisfaction obtained when drinking water was taken from approved shore supplies and the fact that the method is simpler and more economical in the long run than water treatment aboard vessels, it is pro-

posed in the future to more strongly advocate the use of water from certified shore sources for drinking and culinary purposes aboard ship."

#### EPIDEMIC MENINGITIS

Meningococcus meningitis, according to Public Health Reports, has been much more prevalent than usual in the United States during the past three months. For the eight weeks March 4 to April 28, 1,036 cases were reported from forty-two States. In the same period these States reported in 1927, 477 cases, and in 1926, 438 cases.

In the past two months there have occurred in Ontario several small localized outbreaks with fatalities.

#### REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA\* BY PROVINCES—MAY, 1928

| Diseases                      | Nova<br>Scôtia | New<br>Brunswick | Quebec | Ontario | Mani-<br>toba | Saskat-<br>chewan | Alberta | British<br>Columbia |
|-------------------------------|----------------|------------------|--------|---------|---------------|-------------------|---------|---------------------|
| Diphtheria....                | 14             | 11               | 173    | 208     | 79            | 10                | 18      | 70                  |
| Scarlet Fever..               | 46             | 79               | 295    | 375     | 147           | 55                | 96      | 53                  |
| Measles.....                  | 85             | 15               | 872    | 2,003   | 349           | 163               | 67      | 30                  |
| Whooping<br>Cough.....        | 22             | —                | 40     | 292     | 52            | 13                | 6       | 18                  |
| German<br>Measles.....        | 32             | —                | (†)    | 22      | (†)           | 16                | 4       | 25                  |
| Mumps.....                    | 39             | —                | (†)    | 1,195   | 37            | 102               | 38      | 70                  |
| Smallpox.....                 | —              | 3                | 109    | 41      | 4             | 40                | 46      | 36                  |
| Cerebrospinal<br>Meningitis.. | 4              | 1                | 3      | 7       | 3             | —                 | 4       | 3                   |
| Anterior<br>Poliomyelitis     | —              | —                | —      | 1       | 1             | —                 | 2       | —                   |
| Typhoid Fever                 | 6              | 3                | 57     | 41      | 1             | 2                 | 8       | 3                   |

\*Excluding Prince Edward Island.

†Not reportable.

Returns furnished by the Dominion Bureau of Statistics, Ottawa.

The following data of the reported cases of certain communicable diseases for the Provinces of Quebec and Manitoba for the month of April were received too late for publication in the June number.

**Quebec**—diphtheria 179, scarlet fever 427, measles 1,146, whooping cough 54, smallpox 90, cerebrospinal meningitis 1, anterior poliomyelitis 0, typhoid fever 76.

**Manitoba**—diphtheria 35, scarlet fever 121, measles 125, whooping cough 28, mumps 35, smallpox 7, cerebrospinal meningitis 0, anterior poliomyelitis 0, typhoid fever 6.



## PUBLIC HEALTH NURSING

RUBY M. SIMPSON, REG.N., AND FLORENCE H. M. EMORY, REG.N.

### A GLIMPSE OF NORTHERN ONTARIO

THE resident of southern Ontario who, for the first time, catches a glimpse of the northern part of the province is profoundly impressed with its vast resources, industrial, mining and agricultural. Nor have the health interests of that area been neglected. The observer of health activities in the district of Temiskaming finds a provincial nurse who has as her responsibility the public health nursing interests of territory lying between Cobalt and Matheson, a distance of some one hundred miles. Forty townships are included and approximately ninety rural schools. Admittedly, hers is a prodigious task. In the centres of Cobalt, Haileybury and the township of Teck, including Kirkland Lake and Swastika, local appointments have been made under Boards of Health. In Cobalt and New Liskeard, health nurses are functioning under the Victorian Order of Nurses, the latter centre carrying on a generalized programme. The health work of the district is notably augmented by the work of Outpost hospitals administered by the Ontario Branch of the Canadian Red Cross Society. These are located in Haileybury, New Liskeard, Englehart and Kirkland Lake.

The provincial nurse has found a desirable office in New Liskeard in the government building of the district. In adjacent rooms are located the dis-

trict representative of the Department of Agriculture and the Inspector of Public Schools. During the winter season she is obliged to confine her activities to the small centres bordering on the railroad. These are visited once a month. With the opening up of the roads she welcomes an opportunity to visit the schools and homes of the rural area, presenting as they do a fertile field for health teaching.

To aid in making purposeful and effective health work carried on in the rural schools an interesting project has been arranged with the co-operation of the provincial Department of Agriculture and the inspector and teachers of the public schools of the district. In the fall a school health test will be conducted in connection with the thirty-three schools participating in school fairs. Those who are fortunate in being awarded health ribbons at local fairs will compete in a final test held at the championship fair. Medals, gold, silver, and bronze, will be awarded the boys and girls attaining the highest number of points. It is hoped that a medical officer of the provincial department of health will be present to make the final selection. Of marked assistance to mothers are the baby clinics and conferences held at centres throughout the district. These afford an opportunity for instruction in regard to the health needs of the infant and

pre-school child. Then too, the nurse is a welcome visitor in the homes of the rural settler where health teaching relating to the many phases of public health nursing work is needed and desired.

The observer cannot but recognize the possibilities and accomplishments of health work in such a territory. Outstanding in their significance are the kindly attitude of the people toward public health nursing and the value of co-operative effort evidenced by provincial representatives and local groups in the various communities of Temiskaming. Such service necessitates qualities which characterize the pioneer, 'tis true, but adequate compensation is found in the progressive and responsive spirit of the settlers of northern Ontario.

#### RE-ORGANIZATION IN SASKATCHEWAN

On the first day of May 1928, the School Hygiene Branch of the Department of Education was transferred to the Department of Public Health, and, associated with the nurses who are already in the Department of Public Health, will in future be known as the Division of Public Health Nursing.

The School Hygiene Branch was organized in April 1917, and, with a staff of fourteen nurses, has concentrated its efforts on school health

work. Of the 4,770 organized districts all have had at least some service from the school nurse, many of them having been visited four and five times. Correction of remediable physical defects, and improvement in the hygiene of the school plant have been vigorously sought. The teaching of health in the schools has occupied a position of paramount importance in the programme, Saskatchewan being the first province in Canada to introduce health education in the normal schools directed by a public health nurse with a teaching background. The work of the nurses of the Public Health Department has heretofore also been specialized, and has included child welfare clinics, home nursing classes, trachoma and tuberculosis work, all of which will be under the new Division.

The object of the merging of the two branches, Child Welfare and School Hygiene, is to unify the service and to avoid duplication of effort. A plan of generalized public health work has been arranged with special districts allotted to each of the sixteen nurses now in the field. With the recent plan for the establishment of health units, and the new public health nursing service, there will be considerable interest in the future progress of public health work in Saskatchewan.

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## LABORATORY SECTION

G. B. REED, PH.D., AND C. M. ANDERSON, M.D.C.M., C.P.H.

### RABIES

THE present rabies epidemic in Ontario suggests a brief review of the laboratory operations in connection with this disease.

*Infective agent.* The virus is well known to be present in the rabid animal in at least the saliva, brain and cord. The likelihood of infection from saliva appears to depend to a considerable degree upon the extent of the wound laceration into which it is introduced, although there is some evidence that the virus may enter the unabraded skin from infected saliva. Experimental infections in animals may be induced by the injection of sputum or macerated brain or cord by various routes, but most effectively by subdural or intracerebral inoculation. Continued passage through rabbits results in greatly increased virulence to a maximum level, *virus fixe*.

There has been comparatively little advance in our knowledge of the nature of the virus during the last twenty years. The inclusion bodies described by Negri in 1903 have been amply demonstrated to be specific, but their etiological significance is still an unsettled problem. Many who have worked most with this material are convinced that the Negri bodies are parasites. This was very definitely Negri's view and has been supported particularly by Williams<sup>1</sup> in New York and Levaditi<sup>2</sup> in Paris. These opinions<sup>3</sup> are based upon the micro-

scopically visible organization of the Negri bodies and upon their progressive alteration in size and structure. The larger Negri bodies which occur in nerve cells in both man and animals infected with *street virus* consist in vacuolated hyaline masses which stain readily with fuchsin or eosin and contain embedded in the matrix, basophilic granules, inner bodies, extremely variable in size and arrangement. The bodies are occasionally as large as 20 microns in diameter but they vary enormously in size, a variation according to many, resulting from a process of transverse divisions or of budding from the parent body. The smaller or *lyssa* bodies, on the other hand, which may be so minute as to be just within the range of microscopic visibility or possibly smaller are simply hyaline in structure, and particularly the variations which occur in different species of animals, as pointed out by Acton and Harvey<sup>4</sup> and the even greater variation, or their apparent complete absence in animals infected with fixed virus has suggested to many that the Negri bodies are not parasites but merely cellular degenerations. Indeed Goodpasture<sup>5</sup> has recently seen evidences of the origin of the *lyssa* bodies from neurofibrils and of the "inner bodies" from mitochondria under the influence of the virus.

*Diagnosis.* Since Negri's observa-

tions the one method of diagnosis has been the demonstration of Negri bodies in nerve cells. Nearly every experienced rabies student has some individual variation in the many procedures which have been suggested. The rapid smear method of Williams is widely used: small pieces of grey matter are taken usually from the cerebral cortex, hippocampus and cerebellum, smeared on slides, fixed in picric acid, methyl alcohol, and rapidly stained in fuchsin and methylene blue. Many prefer sections prepared as by Mallory's method: pieces of brain are fixed in Zenker's fluid, embedded in paraffin and stained with eosin and methylene blue. In certain cases infected with street virus the recognition of Negri bodies is a very simple matter. Not infrequently only the experienced observer is successful. In doubtful cases the test material is macerated and injected into the brain of guinea pigs<sup>6</sup>.

*Vaccine.* The classical vaccine of Pasteur prepared by drying the cord of rabbits infected with fixed virus over sodium hydroxide for various periods has recently under-

gone several modifications. Probably the most used at present is that prepared by Semple's<sup>7</sup> method. The brain of rabbits infected with fixed virus is macerated in saline to make 8 per cent of brain, and phenol to make 1 per cent is added. After 24 hours at 37° the virus is evidently killed. An equal volume of saline is then added, making 4 percent brain in 0.5 percent phenol solution. This constitutes the vaccine. Usually 14 doses of 2 cc. each are administered.

<sup>1</sup>Williams, A. W., and Lowden, M. M., *Jour. of Inf. Dis* III, 452. 1906, Park, W. H., and Williams, A. W., *Pathogenic Micro-organisms*, Philadelphia, 1924.

<sup>2</sup>Levaditi, C., Nicolau, S., and Schon, R., *Compt. Rend. Soc. Biol.* CXXXVIII 256, 1924, xc, 994. 1924.

<sup>3</sup>Cowdry, E. V., *Filterable Viruses*, T. M. Rivers, Editor, Baltimore 1928.

<sup>4</sup>Acton, H. W., and Harvey, W. F., *Parasitology*, IV, 255, 1917.

<sup>5</sup>Goodpasture, E. W., *Am. Jour. Path.*, III, 385, 1925.

<sup>6</sup>Wadsworth, A. B., *Standard Methods*, Baltimore, 1927.

<sup>7</sup>Semple, C. D., *Indian, J. M., Res.* 1911, 44; *Lancet* 1911, 137.

## NUTRITION

LEXA DENNE, B.A.

THE idea that there is a close connection between man's diet and his well-being is no innovation of the twentieth century. In an ancient chronicle we may read: "In the third year of the reign of Jehoia-kim, King of Judah (607 B.C.) came Nebuchadnezzar, king of Babylon,

unto Jerusalem, and besieged it." When the city fell into his hands, the king ordered that certain noble youths "well-favored and skilful in all wisdom," be selected for training as courtiers. They were to have a special education and a daily portion of the king's meat, and of the wine which he

drank. Living a carefully prescribed life, at the end of three years they would presumably be fit to stand before the great monarch. One of these youths "with knowledge and skill in all learning and wisdom" objected to the dietary part of the programme and purposed in his heart that he would not eat the king's meat nor drink his wine; but the prince of the eunuchs, who had him in charge, protested, saying, "I fear my lord the king." The young man countered with a reasonable proposal: "Prove thy servants, I beseech thee, ten days and let them give us pulse to eat and water to drink. Then let our countenances be looked upon before thee, and the countenances of the youths that eat of the king's meat." This seemed a fair bargain and so the nutrition experiment was undertaken, with the result that at the end of ten days, "their countenances appeared fairer and fatter in flesh than all the children which did eat the portion of the king's meat. So the steward took away their meat and the wine which they should drink and gave them pulse;" and when at the end of their probationary period the king examined them they passed with a score ten times better than all the magicians and enchanters in his realm."

From that time to this, man has given much thought to the problem of where food goes when it is eaten and what it does to the one who eats it. But for many centuries the answers to such questions were philosophical rather than scientific.

Hippocrates, the Father of Medicine, was the greatest philosopher

among the ancients with regard to food. For 2,000 years he and his successors accounted for the disappearance of food as "insensible perspiration" and "heat." In 1614 A.D., a University Professor, Sanctorius, invented a chair with a steelyard connected, to weigh himself before and after meals, so that he might find out the amount of this "insensible perspiration." However, even his efforts did not solve the mystery, as there was no science of chemistry. On down through the years we read of the experiments of the Hon. Robert Boyle, John Mayow, Joseph Black, a Scotch medical student, John Priestley, and Scheele, a Swedish apothecary, gradually leading up to the work of Antoine Laurent Lavoisier, a member of the French Academy of Science. At the urgent request of Priestley and Scheele, he repeated their experiments, confirming the discovery that "fixed air" was carbon dioxide and giving to "fire air" the name of oxygen. Because of his grasp of the significance of the respiratory process in relation to food, Lavoisier is accounted the Father of the Science of Nutrition.

During the one hundred and twenty-five years of scientific investigation following Lavoisier's death in 1794, the outstanding work of Regnault, Liebig, Voit, Pettenkofer, Rubner, Atwater, Rosa, Benedict and Lusk has led to the perfecting of the respiration calorimeter for human experiments and has opened a new era of nutrition.

The dream of Lavoisier has come true. We have arrived at the stage

where we can measure with great precision the amount of oxidation which is going on in the animal body under any given conditions, and we can ascertain just how much food material is required to produce a given amount of heat.

The greatest demand we make upon food is that it shall supply us with calories. Other food factors are equally important qualitatively, and few of these can be secured in ordinary daily life independently of the energy supply, while all of them may and generally must be obtained incidentally to it.

Primarily our task is to learn first how many calories we need and then to see how by intelligent choice of foods which yield them, we may make them the carriers of every other dietary essential. The belief that one simply needs enough food and is accordingly well nourished if three large meals are eaten daily, irrespective of the composition of those meals, is probably the first misconception. The problem of rationing a people, as Dr. Armsby says, "is very far from being so simple a thing as merely supplying a certain number of calories of energy, or grams of protein." Questions of palatability, of dietary habits, of market facilities, and costs of fuel, labor, transportation and marketing, both in agricultural and manufacturing industries, all have to be considered. From the family point of view, we have to consider the climate, income, money apportionment to food, ages and occupations of its various members, previous knowledge and training of the housekeeper, her men-

talities and her possibilities of development and interest in nutrition principles and food preparation.

Food may be eaten in ample quantities, consisting of properly balanced fats, proteins, carbohydrates, minerals and water, and it may daily yield the required number of calories and still we may suffer from faulty nutrition. The comparative recent recognition of three substances, contained in a few articles of food, each one of which is essential to growth and normal health and well being, though not necessarily concerned in the production of heat, is an explanation of this fact. Various terms have been given to these mysterious but necessary substances, such as vitamins, or accessory food substances as applied to all, or fat soluble A, water soluble B, and water soluble C, to designate them separately.

A state of good nutrition is not necessarily evidenced by one's being tall nor by being fat. But it is evidenced by normal size and development, sound teeth and bones, hair and skin of normal color and texture, stable nerves, vigor both mental and physical, normally functioning organs, resistance to disease, and above all that indescribable condition which is summed up as a state of general well-being.

As the baby grows up and develops, certain substances are needed at the various stages of his progress, and if these are not supplied at these stages, there will always be some degree of inadequacy in the adult make-up. It is much like the futility, when build-



ing a house, of using bricks made from straw for the foundation, instead of firm, durable rock and then trying to make the structure substantial and secure, later on, by using good material when building the upper stories.

The solid foundation and substantial beams and girders for men and women are put in during infancy and early childhood, in the shape of good material that forms good nerves, muscles, bones, teeth, and general physical stability. It is practically impossible to make up to the older child or adult for damage caused by failure to supply sufficient nourishment to the growing, developing infant body.

We see all about us the results of this form of neglect in babies, in the bow-legged, knock-kneed, undersized, mis-shapen, chick-breasted adults and in those who are nervous and below par in endurance, are susceptible to colds and other infections and may be summed up as being "not strong."

But probably of graver importance to the public welfare than the well defined nutritional disturbances themselves, is the fact that between a state of good health and the level upon which disease is recognizable is a long scale, along which is ranged an uncounted army of under-par, half-sick people. These are the ones who are tired, nervous, susceptible to infections, with feeble recuperative powers and in general are more or less ineffective in the business of life. It is this border line state which can

not quite be called disease but is not health that is serious to the masses, for diagnosed disease is given treatment, but nervousness, lack of energy and endurance, weakness and inefficiency are not treated; as a rule they are merely tolerated. The sufferers fail to reach their highest possible development and they fail to be of the highest value to society.

The tragic aspect of this state of undernourishment is that though a great deal can be done to nourish and build up the malnourished child or adult, a certain amount of damage that results from inadequate nourishment during the early formative weeks and months can not be entirely repaired later on in life. A large percentage of our undernourished children is on the broad highway to ill-health, invalidism of various kinds and degrees and instability and inefficiency. They are certainly not developing into the clear-eyed, alert, buoyant individuals that go to make up good citizenry.

What are we doing to clarify this splendid scientific work of Lavoisier and his followers so that the bulk of our population is benefitting by their nutritional doctrines? Our schools and universities are certainly doing excellent work for the intelligentsia or 25 per cent; but have our doctors, nurses, nutrition workers yet brought the vocabulary and principles of nutrition down to the understanding of the man who really needs them, the 75 per cent of population, the bulwarks of our country?

# NATIONAL VOLUNTARY HEALTH AGENCIES

JEAN E. BROWNE, REG.N.

## HOME NURSING CLASSES

A COURSE of instruction in Home Nursing and Home Hygiene, established by the Red Cross in 1924, has already been taken to over 14,000 women. These women have gained a knowledge of food values and the importance of a well-balanced dietary for good health. They have been given simple instruction in the recognition of illness, and have learned the elementary principles of the care of the sick. They have thus become better managers of their own households, and have been able to instruct and advise their less well-informed neighbours.

The success of the Home Nursing programme is due largely to the voluntary service of graduate nurses who, as teachers of classes, have rendered an important contribution to the health and welfare of their communities. Assistance in the formation of classes has also been received from Women's Institutes, Imperial Order Daughters of the Empire, Young Women's Christian Association, Women's Organizations in Churches, and other groups.

If every wife and mother possessed the knowledge and the will to create healthy conditions in her household, Canada would be a nation of happy homes. The Red Cross is endeavouring to make such instruction and stimulus available to every Canadian household that needs it.

## JUVENILE IMMIGRATION

Under the caption "Several Years After", the Canadian Council on Child Welfare has issued a report on an inquiry which has been in progress for over a year, into a representative group of former juvenile immigrants arriving in Canada in 1910, and in 1920.

The report, which is mainly the work of Mrs. J. Breckenridge McGregor, of Toronto, represents an intensive study of the whole problem, and carefully considered recommendations, in the drafting of which many outstanding Canadian workers have collaborated.

The study was made with the endorsement of the Association of Canadian Clubs, and financed by the Montreal Women's Canadian Club. It was carried through with the co-operation of the Canadian Department of Immigration, and certain of the Oversea Juvenile Emigration Agencies. Provincial Child Welfare authorities have also been interested in the inquiry.

Owing to the nature of the problem, the inadequacy of information and the attitude of certain of the larger Oversea Juvenile Emigration Agencies, it was impossible to make the study as complete, or intensive, as it was hoped that it would be. It has afforded a discerning glimpse, rather than an intensive examination, or survey, of a cross-section of this move-

ment. But it has been possible to ascertain clearly many definite facts which the report summarizes carefully, under twenty-four heads. Out of these findings, the report offers many constructive suggestions. The following recommendations are made:

(1) That more adequate safeguards shall be provided for the selection of juvenile immigrants overseas.

(2) That more adequate safeguards shall be provided for the handling of the children in Canada.

(3) That steps shall be taken to develop better contact and understanding between old country and Canadian interests.

(4) That the movement shall be frankly recognized as one of supply-

ing agricultural and household help in Canada and be limited to children suitable for that purpose.

(5) That the legal status as to guardianship of the children in Canada shall be determined.

(6) That the migration of the better type of British young people shall be developed as a hopeful and constructive solution of Canada's need for increased population.

Many suggestions for the effective carrying out of these recommendations are included.

The report will be mailed free, upon request to the Canadian Council on Child Welfare, 408 Plaza Building, Ottawa.

## NEWS AND COMMENTS

P. A. T. SNEATH, M.B., D.P.H.

### REPORT OF FINDINGS OF ROYAL COMMISSION

**P**RESS reports indicate that the Royal Commission, investigating the deaths of twelve children following diphtheria immunization in Australia, confirm the previous report that the material used was toxin-antitoxin and the factor causing the deaths was bacterial contamination. A more complete account will be given as soon as the full report is received.

### PREVENTION OF MENTAL DISEASES

**D**R. C. M. Hincks, the Medical Director of the Canadian National Committee on Mental

Hygiene, stated recently that the Rockefeller Foundation is contributing \$150,000 towards a half million dollar fund to be devoted to research on the early prevention of mental diseases. The remainder of this fund is to be made up by the Canadian Government.

### MARITIME PROVINCES

**T**HE Association of the Medical Health Officers of Nova Scotia will meet in Halifax, October the 9th, in conjunction with the Medical Society of Nova Scotia, which meets October the 10th.

Dr. George C. Melvin and Dr.

William Warwick, who have been the guests of the International Health Board on an inspection tour of the county health units organized under that body in the Southern States, have returned to St. John, N.B.

#### QUEBEC

**A.** GRANT Fleming, M.C., M.B., D.P.H., late Managing Director of the Montreal Anti-Tuberculosis and General Health League, has been appointed Professor of Public Health and Preventive Medicine in McGill University, and as such, Director of that Department.

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The following obtained the Diploma in Public Health from the University of Toronto at the recent Convocation:—

Dr. G. D. W. Cameron, Peterborough, Ontario; Dr. R. Felton, Victoria, B.C.; Dr. L. R. Vezina, Richmond, Que.; Dr. J. H. White, Vancouver, B.C.; Dr. D. B. Wilson, Toronto, Ontario.

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Dr. D. T. Fraser, Associate Professor of Hygiene and Preventive Medicine in the University of Toronto, is doing work at the Pasteur Institute in Paris.

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Dr. C. H. Best, Assistant Professor of Physiological Hygiene in the University of Toronto, is at the Hampstead Institute for Medical Research in London, England. He will be associated with Professor A. V. Hill of the University of London in a series of physiological observations to be

made upon the competitors at the Olympic games in Amsterdam during the last week of July.

#### MANITOBA

**D**R. E. W. Montgomery, Minister of Public Health, and Dr. M. S. Fraser, Provincial Epidemiologist, expect to leave very shortly for a trip through Northern Manitoba which will likely include a visit to Hudson's Bay. The object of this tour is to conduct an inspection of the various new towns, mining and railroad camps, which are scattered throughout this large district. The sanitation of these camps and towns offers a number of interesting problems and the Minister desires to acquaint himself with first-hand information as to what will be required to safeguard the health of the large number of people which will flock into this district during the coming summer. The trip should be an interesting one and will be made very largely by canoe.

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Arrangements for the coming meeting of the Canadian Public Health Association at Winnipeg in October are progressing and a local committee has been formed which will deal with the matter of making the stay of those who honour us with a visit as pleasant as possible. The following compose the local Committee:—The Honorable Dr. Montgomery, chairman; Dr. T. A. Pincock, secretary; Dr. H. M. Speechley, Dr. Ross Mitchell, Dr. Oliver Waugh, Dr. A. T. Mathers, Dr. A. J. Douglas.

## ARTHUR BERNIER

Dr. Arthur Bernier, Professor of Bacteriology at Montreal University, and Chief Bacteriologist for the Provincial Bureau of Health of the Province of Quebec, died on April 29, 1928.

Dr. Bernier received his early education in Ste. Marie College, in Montreal. He then followed the Medical Course at Laval University of Montreal, and upon graduation and the usual period as interne at Notre-Dame Hospital, went to France to study two years at the Pasteur Institute under Dr. Roux and to do hospital work in Paris under Dr. Potain.

Upon his return, Dr. Bernier joined the laboratory staff of Notre-Dame Hospital in Montreal, and later held a similar appointment at the Hotel-Dieu in Montreal. About the same time, he was made Professor of Bacteriology at Montreal Laval University, a position he has held for over twenty years. In 1908, he was appointed Chief Bacteriologist for the Provincial Board of Health. Later, he took charge of the course of General Pathology at Montreal Laval University, and was made a faculty council member of the same University.

In the passing of Dr. Bernier, Public Health Bacteriology in Canada has lost a sincere and devoted worker. From a small beginning in 1908 he developed the Laboratory of Bacteriology of the one-time Provincial Board of Health, when only a few examinations were made, during the

year, to the present Laboratory of the Provincial Bureau of Health, which last year made over 50,000 examinations.

The writer's association with Dr. Bernier during practically the whole of this period permitted an appreciation of the careful, methodical technique which Dr. Bernier employed in all his work. Slow but sure in his scientific conclusions, he quickly established a reputation for accurate, dependable work which was of the greatest value to the cause of Public Health in the Province of Quebec.

Of a naturally retiring and reticent disposition, Dr. Bernier was nevertheless warm-hearted, affable and most congenial with those with whom he was really familiar. To his kindly and paternal interest not a few young men owe their present success in responsible, technical work. His associates mourn his loss as that of a thorough scientist, a zealous co-worker and a sincere friend. To them his memory will ever remain an inspiration to the achievement of honest, accurate scientific investigation.

A worthy son of the race of Pasteur and Roux, Dr. Bernier devoted his life to giving to his people the practical benefits of a new and wondrous science. His death marks the passing of another of those pioneers who, by their unselfish and unceasing labours, have rendered an enduring service to their fellow men.

*M. H. McCrady.*

## BOOK REVIEWS

D. T. FRASER, B.A., M.B., D.P.H. and R. R. McCLENAHAN, B.A., M.B., D.P.H.

### **The Principles of Sanitation—**

By C. H. Kibby. F. A. Davis Co., Philadelphia, 1927. 346 pp. Price \$4.00.

This is a well printed book with clear type and is of particular value to sanitary inspectors. Local sanitary inspectors, as the author states, are not well grounded in the fundamentals of personal hygiene and sanitation. This book, written in simple language, will supply the inspector or health worker with the information which he needs.

The chapters on the various communicable diseases are well done and represent in the main the opinion of the majority of health authorities. The chapter on immunity might better have been placed near those on communicable diseases rather than between chapters on milk and fly control.

The chapter on the control of malaria is not so important to Canada as to a southern state like Alabama, but no doubt the methods of mosquito control mentioned will be of value in some parts of Canada.

The short chapter on occupational diseases is timely owing to the increasing interest in this subject. The illustrations, particularly of the various sanitary appliances, are excellent. Any sanitary inspector who carefully reads this book will undoubtedly increase his usefulness to the community which he is serving.

R. R. McClenahan.

### **The Ultra-violet Rays—**

By Arnold Lorand. F. A. Davis Co., Philadelphia, 1928. 258 pp. Price

The experiences of an extensive practice in Carlsbad provide the material for this so-called clinical book. The preliminary chapters dealing with the physical nature of sunlight and ultra-violet light are usually inaccurate and often incomprehensible, for example—"the light of the sun differs from the carbon arc-light and from the quartz light by a variation of 300 mm." This sentence is devoid of meaning. Further on, the following statement is made—"this is not true of glass, which allows only 10% of the ultra-violet to pass, the remainder being lost." Actually glass allows only rays with wave-lengths from about 400 to 320 mm. to pass through. All the rays with shorter wave-lengths are not transmitted at all. One is surprised to read that the "quartz light," in other words the mercury vapour quartz light, "does not give off any red rays." Certainly incandescent mercury vapour has some lines in the red end of the spectrum and therefore this lamp must give off some red rays.

The succeeding chapters include a great many dogmatic statements on the controversial subject of the physiological relationships of the endocrine glands. A large section of the book is devoted to the causes and treatment of baldness and gray hair. The author seems much concerned with



merely cosmetic problems. A fair number of passages are badly translated, *e.g.* "exposition" for "exposure."

No one should read this book unless he is much concerned over his baldness and is willing to resort to heroic measures in an attempt to remedy it.

*E. Chant Robertson.*

**A Handbook for the Patient: Diabetes and its Treatment by Insulin and Diet**—By Orlando H. Petty, M.D. Publishers: The Davis Company.

This interesting little book contains a series of simple lectures embracing talks on the disease itself, on foods, on diets, on urinalysis, on insulin, and on diabetic hygiene.

Most of the difficulties of a diabetic are the trivial perplexities arising in the arrangement of his diet. He needs teaching rather than lectures and the teacher with the most practical experience is the dietitian. For a handbook or guide it seems reasonable, then, that a dietitian's contributions on matters of food will prove of more practical help than those of the physician.

*A. M. Jeffrey.*

**Convalescence: Historical and Practical**—By John Bryant. The

Sturgis Fund of The Burke Foundation, New York, 1927. 269 pp. Price

The book is divided into three parts:

Part I contains the historical review of institutions especially set aside for the care of convalescents. The early pioneer work in France is described in detail and this is followed by the more recent developments on the American continent. Finally, there is a description of the Houses of Rest in Russia. Part II is a very complete account of the convalescent care in the U.S. army. The last chapter handles the subject from the Public Health point of view. Part III continues Part I bringing it up to date.

This work is a complete and detailed description of the care of convalescents. It deals rather with the group than the individual, so that it is of most interest to those who are concerned in arranging affairs of the community. Although everyone is eventually affected by matters of community interest, still this is scarcely a book for the majority to read from cover to cover; and it is possible to make this statement without denying an interest in the subject.

A little less material with perhaps somewhat better serving would do much to stimulate our reading appetite.

*A. M. Jeffrey.*

## BOOKS RECEIVED

*Publicity for Social Work.* By Mary Swain Routzahn and Evert Routzahn, Department of Surveys and Exhibits, Russell Sage Foundation, New York, 1928. pp. 392. Price \$3.00.

*Four Centuries of Medical History in Canada.* By John J. Heagerty, M.D.,

D.P.H., Department of Health, Canada. Toronto, The Macmillan Company of Canada Limited, at St. Martin's House, 1928. Two volumes, pp. 769. Price \$12.00.

*Filterable Viruses.* Edited by Thomas M. Rivers. Baltimore, The Williams & Wilkins Company, 1928. pp. 428. Price \$7.50.

# CURRENT HEALTH LITERATURE

## *A Selected Public Health Bibliography with Annotations*

RUGGLES GEORGE, B.A., M.B., D.P.H.

### **Health Habits of College Women**

—A study of health habits at a Woman's College indicates a steady decrease in the practice of health habits during the successive four years of the course. The author concludes that the theoretical knowledge in hygiene of the students is in inverse ratio to their practice of health habits.

EMERSON, W. R. P. Health Habits at a Woman's College. *Journal of the American Medical Association*, May 5, 1928, page 1434.

**State Medicine**—The author believes that State Medicine may provide a standardized diagnosis and treatment for a standardized citizen but it means the death of individualism, of humanitarianism and of scientific practice.

FISHBEIN, M. Socialized Medicine. *The Nation*, April 1928, page 484.

**School Ventilation**—Basic data and a calculation for determining the amount of fresh air for each pupil required to maintain correct temperature equilibrium.

DUFFIELD, T. J. How Much Fresh Air Does the School Child Need? *Journal of the American Medical Association*, April 21, 1928, page 127.

**Heart Disease**—An enquiry into the relation of tonsils and enlarged glands in cardiac disease in rheumatic children.

WILKINSON, K. D., and OGILVIE, A. G. Rheumatism, Tonsils and Glands. *The Lancet*, March 31, 1928, page 647.

**Red Cross Outposts**—Types of Nursing Outposts operated by the Canadian Red Cross, policy of admin-

istration and pictures of the services rendered.

WILKINSON, M. E. The Red Cross Outpost as a Health Centre. *Public Health Nurse*, May 1928, page 216.

**Morbidity Statistics**—A summary of the general results of the Hagerstown Morbidity Study relating to the causes and effects of illness at different ages. Respiratory diseases are responsible for one-half of the illnesses in every age period.

SYDENSTRICKER, E. The Causes of Illness at Different Ages. *Public Health Reports (U.S.P.H.S.)*, May 4, 1928, page 1067.

**Health Centres**—The co-operative project of St. Mark's Hospital and the Henry Street nursing service in New York City.

PLUMLEY, M. L. A Health Centre in a Hospital. *Modern Hospital*, May 1928, page 144.

**Health Education**—Reasons for the desirability of health education in clinics and some of the concrete forms that health education may take.

GALDSTON, I. Health Education in the Clinic Promotes Better Health. *Modern Hospital*, May 1928, page 64.

**International Health**—Some outstanding activities of the Health Section of the League of Nations.

HEISER, V. G. International Health and the League of Nations. *Better Health*, (San Francisco) March 1928, page 112.

**Maternal Mortality**—Report of the Standing Joint Committee of Industrial Women's Organizations.

The Prevention of Maternal Mortality. *Medical Officer (London)*, April 14, 1928, page 161.

